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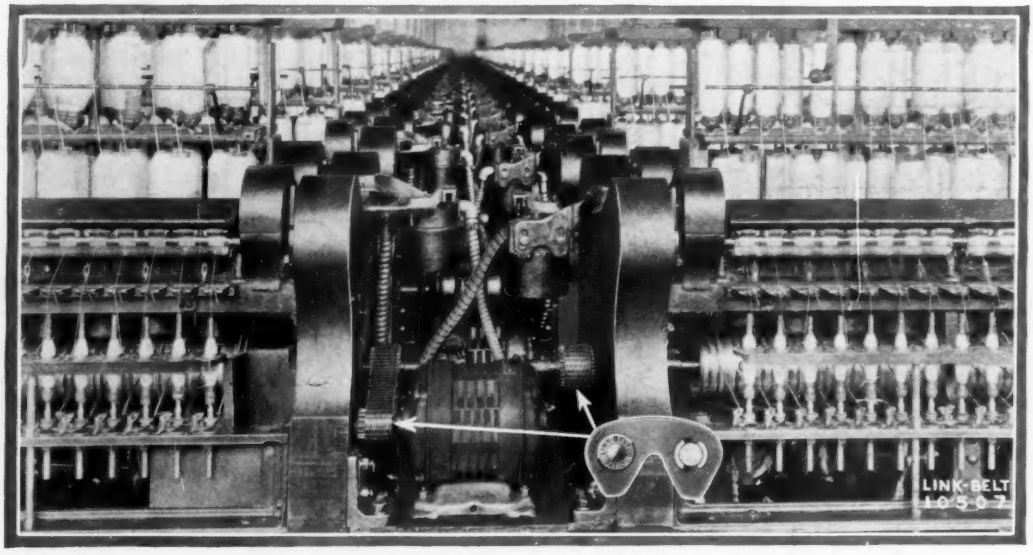

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October, 1928

W. R. C. SMITH, Publisher
T. W. McALLISTER, Editorial Director
ROBERT W. PHILIP, Editor

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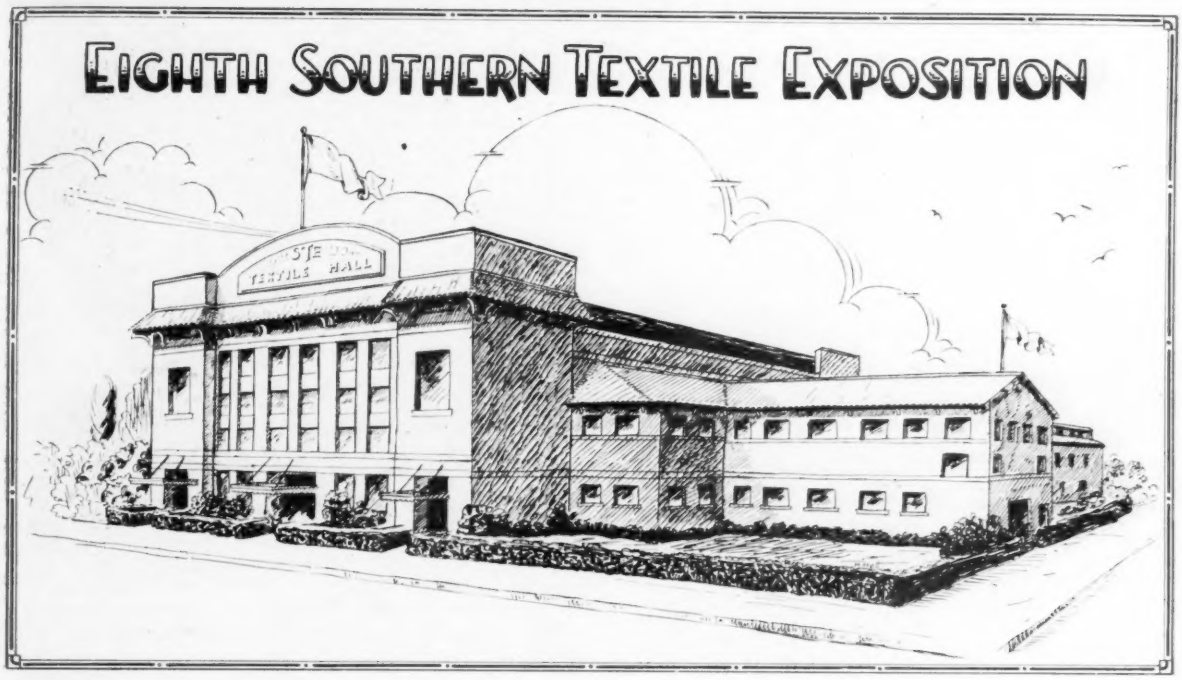
EIGHTH SOUTHERN TEXTILE EXPOSITION



IN this drawing of Textile Hall, at Greenville, S. C., the artist shows clearly how the building, physically, depicts the ever-expanding textile industry in the South. The original main building at the left several years ago became too small, and the permanent annex to the right was necessary. In addition to this, the second annex, or third unit of the exposition buildings, was required to provide accommodations for those desiring exhibit space.

REFLECTING by its own expansion the tremendous growth of the textile industry in the South, the Eighth Southern Textile Exposition will be held at its permanent home, Textile Hall, in Greenville, S. C., during the week of October 15th to 20th inclusive. According to plans, this will be unquestionably the best ever held. Certainly it will be the largest, late applicants finding it necessary to take space wherever available. The "Standing Room Only" sign assuredly could be appropriately placed over the Manager's door.

By thus filling every available exhibit space, the Exposition is a striking tribute to the industry with which it is affiliated and for which it is held. Overflowing the commodious building originally erected to house it, the Exposition has spread to fill not one, but two large annexes; and thus it typifies the expansion and development of cotton manufacturing in the South.

It is almost superfluous to say that the exhibits in the Exposition will be those of manufacturers of and dealers in all kinds of machinery, equipment and supplies applicable to the cotton mill. More than the usual number of operating exhibits will be conducted—and every exhibitor will strain every effort to present the latest, most modern and efficient products possible. There will be an exceptionally large number of new ideas displayed and exhibited at the Show this year for the first time. Ever since its institution, the mill men have regarded the Show as the one opportunity for most of them to "freshen up" on the new developments in machinery and equipment.

The largest number of individual exhibitors on record, to occupy a total floor space of practically 50,000 square feet; many of which have been regular features since the first show, with others taking part for the first time—the usual bi-ennial situation on the usual enlarged scale.

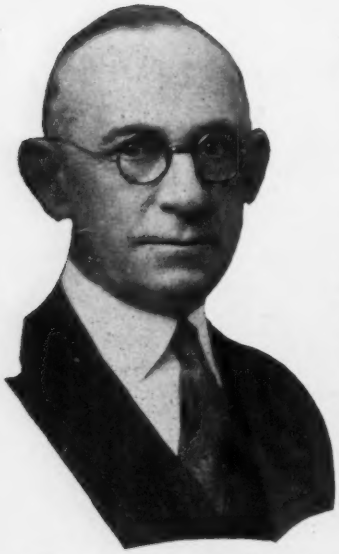
To make the Exposition worth-while for the exhibitors, there will be the largest attendance during the week that has ever patronized the Show. This prediction is made confidently and without reservation. The Exposition draws its attendance from all classes of textile representatives, all the way from mill owner to operative. There has been no Exposition of this character for two years, now—two years that have been important ones, in many respects, in machinery and equipment development—and the interest of the mill men of the South has been especially whetted for the occasion.

Unquestionably, also, there will be a considerable number of New England manufacturers who will take this opportunity to come South to visit the Show and inspect plants at the same time.

All in all, from the standpoint of the Exposition itself, and the attendance, every past record will, beyond doubt, be broken.

In passing, it might be said that many veterans visiting the Show will marvel, when they stop to contrast the Exposition with the first one—held a comparatively few years ago just across the street, by temporary arrangement. The Exposition has become truly a definite institution in southern cotton manufacturing, keeping pace in its amazing development.

Aside from the Exposition itself, there will be, as usual, an elaborate program of meetings and entertainment during the week. Chief in importance among the meetings will be the semi-annual convention of the Southern Textile Association, to be held on Friday of Show Week, September 19th. A valuable program has been arranged. In order not to detract from attendance at the Show, Secretary Gregg has scheduled only one session, on Friday morning, the features of which can be found on the following page.



William G. Sirrine, President of Textile Hall Corporation.

Features of S. T. A. Meeting Program

THE semi-annual meeting of the Southern Textile Association will be held at the Poinsett Hotel, Greenville, S. C., on Friday morning, October 19th. Only one session will be held, to permit the delegates ample time to inspect the Exposition. Carl R. Harris, president, and L. L. Brown, vice-president, will be in charge.

"Progress" will be the theme of the meeting, which will have among its features the following items:

Address by Herbert G. Beede, secretary, Fales & Jenks Machine Co., Pawtucket, R. I.

"The Advantage of the High Speed Roller Spindle," by R. H. DeMott, general sales manager, S K F Industries, Inc., New York City.

"New Fabric Constructions Made from All-Celanese Yarns and Celanese in Conjunction with Other Fibres," by Robert G. Dort, fabric department, Celanese Corporation of America, New York City.

"Labor Extension System," by P. A. Smith, general superintendent, Manville-Jenckes Co., Gastonia, N. C.

Reports on New Inventions, and from the Various Division Chairmen of the Association.

The meeting will adjourn for an Association luncheon to be served in the main dining room of the hotel.

Miss Bertha M. Green, Secretary of the Exposition Company.

This session will be followed by the Association luncheon, in the main dining room of the Poinsett Hotel. For this occasion, a local Greenville committee, headed by Edwin Howard and Lee Harris, will provide some thoroughly enjoyable entertainment. These men handled the entertainment features of the luncheon at the 1926 meeting, which is remembered pleasantly by all who attended. A dance in honor of the Association will be conducted in the Poinsett Ball Room on Friday evening.

Each day of Show Week has been designated especially, and a chronological outline of the program, with details, is as follows:

MONDAY, OPENING OF EXPOSITION at 10 A.M., by President William G. Sirrine.

TUESDAY, MASTER MECHANICS' DAY. On Tuesday morning, in the ball room of the Poinsett Hotel, the Master Mechanics' Division of the Southern Textile Association will hold a session, under G. T. King, superintendent of power, Lancaster Cotton Mills, Lancaster, S. C., who recently was appointed chairman of the division. The afternoon and evening will be spent by the master mechanics and engineers in visiting the Exposition.

WEDNESDAY, AMERICAN SOCIETY OF MECHANICAL ENGINEERS DAY. A meeting of the Textile Division of the Society will be held on Wednesday, with Alex Dow, president of the organization, as honor guest. James W. Cox, Jr., of New York City, chairman of the division, will be in charge. Fred R. Low, editor of "Power", will also be present. A Red Cross "Carnival Ball" will be held following the Show on Wednesday evening.

THURSDAY, ARKWRIGHT DAY. This day designated in honor of the Research Group of the Southern Textile Association, whose officers will meet on Thursday evening.

FRIDAY, SOUTHERN TEXTILE ASSOCIATION DAY.

SATURDAY, OPERATIVES' DAY. It is always customary for hundreds of the mill operatives in the plants in and around Greenville, to throng to the Exposition on the closing day. The Exposition will be formally closed at 6 P. M. on Saturday.

As usual, suitable decorations will make the Exhibit Hall attractive. One interesting feature to note is that the illumination of the hall will be secured from a new up-to-the-minute lighting system, consisting of 99 300-watt Glassteel diffusers, which has been installed in the building. The system was designed by George Wrigley, of J. E. Sirrine & Co., Greenville, S. C., and G. E. Park, illuminating engineer for the National Lamp Works, Charlotte, N. C. All the wiring costs were contributed by the Southern Textile Corp. The Glassteel diffusers were donated by the Benjamin Electric Mfg. Co., the Ivanhoe Division of the Miller Co., the Westinghouse Electric & Mfg. Co., and the Wheeler Reflector Co. The lamps were donated by the National Lamp Works.

Aside from the immediate practical value of good lighting as an aid to the Exposition, the lighting system will constitute a display in itself, as indicating the type of illumination adaptable to the textile mill, and demonstrating its possibilities.

As has been customary upon the occasion of previous Expositions, many mills will follow the practice of sending their overseers, superintendents, and other operating executives to the Show in groups, on different days. This arrangement permits all executives and sub-executives interested to attend the Exposition without a disruption of the operating organizations at home, and makes the attendance from each mill more representative.

It is understood that the Exposition this year will attract an unusually large number of mill men from Texas and other states somewhat outside of the central manufacturing sections, as well as an unprecedented number of men from more convenient points.

In spite of the week's intense activity, many will find opportunity for outside diversion. The golf courses and other privileges of the Greenville country clubs will, as in the past, be available for visiting mill men and exhibitors.

President William G. Sirrine has engaged one entire floor of the Poinsett Hotel to accommodate visiting mill executives, it is announced. As usual, many of Greenville's best homes will be open to Exposition delegates who do not have regular hotel accommodations.

Physical Examination for Employees— IS IT FEASIBLE?

In Beginning a Discussion of Industrial Relations, This Timely Phase of the Subject is Presented

By W. M. McLaurine

IN THIS stress and strain period of industrial, commercial and social life many people are prone to think that the race is growing weaker because our charitable and other institutions are constantly crowded, and it seems that the ills of mankind are untold and increasing. Yet the mortality tables of our insurance companies, which are perhaps our safest barometers in measuring the probabilities of human life, are constantly raising the expectancy of the duration of life of the average man.

With the idea of salvaging material resources that has been occupying such a prominent place in industrial life in recent years there has been an idea of salvaging human life, and this idea has been adopted not alone by the medical profession and social agencies of the state and nation, but society by and large has adopted the idea, and perhaps today no agencies are so scientifically and methodically executing this program as are our industries.

The old idea of welfare work has been outgrown. The term is practically obsolete; the connotation of its definition is entirely too narrow to express the modern idea; for the lack of a better expression the term Industrial Relations is now used to cover a multiplicity of activities that are carried on by employers and employees in this salvaging process.

To try to discuss the various ramifications of this term in one paper would be entirely too ponderous and tedious, so the writer desires to call to the attention of industrialists a discussion of two phases of industrial relations, namely: A physical examination as a prerequisite for employment, and the value of health for the industrial community.

The policy of requiring a physical examination for employment has been an idea among textile manufacturers for a long period of time, but for many obvious reasons it has never been incorporated to any great extent as a part of the industrial program. Recently, however, there is a growing tendency among many of the large textile mills of the South to require a physical examination.

The question of health has attained a different slant from what it was in the old days. The old idea was to cure the sick man; the new idea is not only to cure the sick man but to prevent the well man from becoming sick, and to safeguard those physically weak.

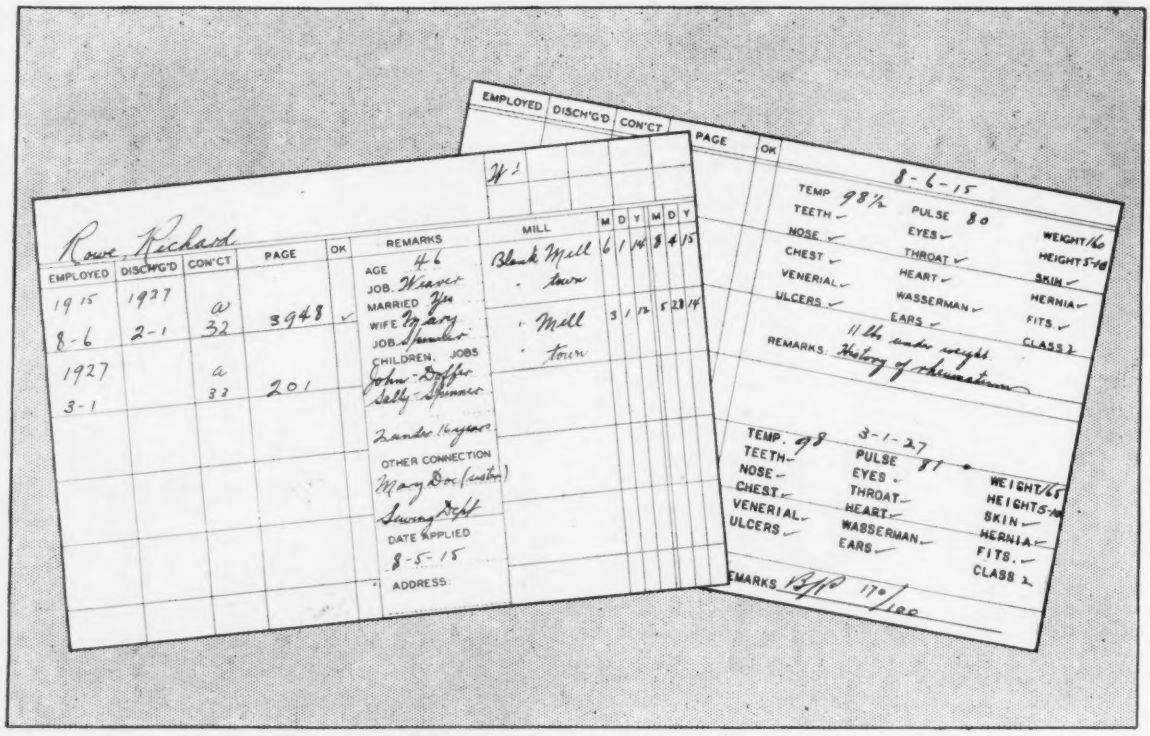
Perhaps the insurance companies have done more than any other agency to popularize the physical examination idea. We can remember the time when insurance agents were termed a nuisance, and insurance was one of the luxuries and, therefore, one of the unnecessary possessions of life, but today, in our complex civilization with so many physical and financial hazards, we find that the truly representative insurance man performs a necessary and wholesome service to society. His examinations, studies and reports have brought to the attention of the industrialists the wonderful opportunities made possible in efficiency of production and in the happiness of human life through the plants having the physical information of its employees available, with proper supervision for their care.

Many people have an idea that a physical examination implies a rejection of people who are not physically sound, but such is a fallacy. It does mean the rejection of certain types of totally unfit, but there are many people who are not physically sound that are very capable and thoroughly efficient in many of the industrial opportunities of life.

Recently the writer had opportunity to talk with several large textile mill managers who are requiring a physical examination for employment. One mill executive stated that his mill

Following this discussion of the use of physical examinations for cotton mill employees, Mr. McLaurine will, in the next issue of COTTON, carry the thought, logically, into a consideration of health programs for the mill. In this succeeding article will be pointed out some of the ways which progressive mills have successfully adopted in raising and maintaining among employees, and the influence of health in producing not only happy, contented citizens, but more efficient producers as well.

Photographs depicting actual practice in a well-known southern mill will be used for illustrations, giving evidence of how this phase of the new Industrial Relations problem is being met at this plant.



A Typical Physical Examination and Employment Report Card.

had standardized a form of examination in accordance with the physical qualifications necessary for its employees in their various relationships in the plant. After examining the applicants, they were put into one of four standard groupings established by the mill according to the physical requirements of the plant, and according to the physical strength and weakness of the applicant. Group (1) was what they called their physically perfect group; employees that were capable physically of occupying any of the most extreme positions necessary in the operation of a plant. Group (2) represented those who had some slight deficiencies, but whose placement would require discretion. Group (3) represented those of somewhat weaker physical nature, who had first possibilities of being developed into Group (1) or Group (2) under proper medical and plant supervision; or those who could fill certain positions that would not deteriorate the general health of the applicant. Group (4) represented those below the dead line, or whose physical conditions were such that the plant felt it would be hazardous to their health and well being to be employed.

There were other ideas suggested in this conference, but details perhaps should be worked out by the individual plant. The purpose of this exposition is merely to show the value of the idea, and to create in the mind of the reader the desire to incorporate it into his industrial policy.

The feasibility of inaugurating this policy has been the fact perhaps that has deterred some mills from inaugurating it. It was the consensus of opinion of all those who expressed themselves as having adopted this policy that there was no trouble incurred in its inauguration.

Several stated that after they had decided to adopt

THE PROMINENT southern mill which uses the above card has a complete record of each employee. On the front side, shown at the left, the name and age of the employee is shown, and information giving the number in the family, names of workers, and relatives already in the service of the mill. It also shows from what cotton mill or town the employee came, the period of employment at each of the mills, and any other records deemed advisable. A history of the re-employment of the operative by the mill can be shown.

The form for the physical examination is printed on the reverse side of this employee's index card, and this is shown at the right. The various items checked and filled out are self-explanatory; "Ven." meaning Venereal; "Was.", Wasserman test; "U.W.", under weight; etc.

In the space below this portion of the form, it will be noted these items are repeated and filled in, this showing the record of a later examination. Thus all of the records on an employee are kept together. Among the questions asked the applicant by the doctor are: Have you had asthma? Rheumatism? Piles? Operation? Any illness in the past two years? If so, what? Have you been in the Army? If so, any compensation from the Government? And for what disability? Are you crippled? Have you had any amputation? Do your feet swell? For the female, the following questions are asked: Any female trouble? If Pregnant? Age of youngest child, if any? If ever in hospital or institution for treatment? If so, where and for what? Any chronic deseases? If worked here before was illness the cause for quitting? Teeth of applicants are classified as follows: No. 1, Good; No. 2, Fair; No. 3, Poor.

As a result of these examinations, applicants are classified in one of four groups, as given below, and as explained fully in the accompanying article:

No. 1.—For persons physically fit for any employment.

No. 2—For persons physically fit for any employment, but below par in physical development or other conditions.

No. 3—For persons physically fit only for certain employment when specifically approved for it by examining physician.

No. 4—For persons physically unfit for any employment.

the policy they had made it obligatory only upon new employees coming into plant after the date of decision, and then they had made it optional with the employees already in the plant, and that after a year or two they had found that they had practically complete physical records of every employee in the plant. Some even went so far as to state that once each year their employees and executives from the president to the sweeper are given a physical examination.

It may not be amiss now to indicate a few results that may be obtained from this policy.

In the first place the efficiency of the plant is determined by the efficiency of the worker, and the efficiency of the worker is determined, in a large measure, by his physical condition and his proper placement. Without a physical examination it is not possible to judge the efficiency of the worker or the care that must be used in placing him.

Again, our complex laws and humanitarian desires are placing upon industry not only moral responsibilities for the health and safety and general welfare of its employees, but are also placing upon industry a financial obligation. These financial obligations have expressed themselves in the form of having mills carry accident and liability, workmen's compensation, and other forms of insurance. Even with the firms covering themselves well and protected, there ofttimes arise complex physical defects, such as hernia, cardiac, lesions, back strains, and numerous other defects, which workmen may attribute to employment, whereas, they may not have been acquired in their present employment; they may have only been discovered accidentally in the plant in which medical examination is not required.

Another advantage is the fact of placing employees in positions in which their physical health will not be impaired.

Nearly all reputable industries today have a health program as a part of their policy, and no information is so concrete or so advantageous to those in charge of the health department as this specific information as to the general physical condition of each employee; without which it seems that a health program would be a pure hit and miss effort without any definite aim or direction.

Absenteeism and tardiness are high cost factors in any industry, and a very large per cent of these is attributable to the physical condition of the employee, or his family. Inasmuch as frequently in the textile industry, several members of the same family are employed; or to state it another way, instead of employing individuals, families are often employed and the employment effected, is often made by one member of the family, it seems very imperative that a physical examination is more necessary in order that independent family units may be secured. In the South practically all of the mills have large villages, and this village outlay is quite an expense; therefore, it is necessary that as far as human efficiency will permit the village shall be as small as is socially possible, and that the home in the village shall represent a certain output of efficient units of work. The old idea of 15 and 25 per cent surplus of labor in the village to offset absentees is passing away and today the slogan is "fewer workers, better workers and more pay". It seems to the writer that a physical examination occupies a component part in this program.

[Next month, Mr. McLaurine will discuss the value of health in the industrial community, following logically this treatment of physical examination.—The Editor.]

Cotton's International Trends

EXPORTS of American cotton were nearly 2,500,000 bales less during the last than during the preceding "cotton year". The total of exports was 6,430,494 bales for the year ending July 31, last, compared with 8,795,375 bales for the previous year. The figures may give some indication of the effect of price on the foreign consumption of this raw material. The low prices of the year 1926-27 not only facilitated consumption abroad of American cotton on its own account but led to our cotton being preferred in considerable extent to that of other countries.

Germany continues to hold first place among countries importing American cotton, having taken the lead from Great Britain two years ago. Germany probably does not yet lead as a foreign consumer of American cotton, a large portion of that country's imports being re-exported to other Continental countries. Germany imported 193,678 metric tons of all kinds of cotton in the first six months of this year and at the same time re-exported 39,997 metric tons. This was more than was re-exported during the first half of last year when Germany's imports of cotton were much larger than in 1928.

Exports of American cotton to Great Britain fell off more than a half million bales, as compared with the preceding year's volume, during the last "cotton year". About two-thirds as much went to Japan, which took more than a million bales. The previous year's record of American cotton exports to China and India was lowered enormously. Yet, despite price margins, China took 123,000 bales and more than 70,000 went to India.

The Oriental figures indicate how raw cotton is taking the place of western-made cotton goods in the Orient. Thirty years ago the cotton which lately has been going from the United States to Japan, China and India would have gone to Great Britain for manufacture into goods for sale in the Oriental countries, whose cotton goods may be seeking large scale entry into the Occidental markets before long.

Prize Awards for S. T. A. Members

PRIZES aggregating $500, for the best papers submitted on various phases of cotton manufacturing have been offered to members of the Southern Textile Association, J. M. Gregg, secretary, has announced. L. Sonneborn Sons, Inc., manufacturing chemists, New York City, are the donors. The prizes will be divided among members representing the several discussion divisions of the Association, all members being eligible for competition. A committee from the Association will be appointed to judge the papers, and the winners in each Division will read their papers at the division meetings; the papers later to appear in the Association Book of Proceedings.

The award for the best paper in each division will be $25.00, with $10.00 or $15.00 as second prize. For the dyers, bleachers, finishers and mercerizers, the total award is $100.00, to be divided into four prizes of $25.00 each.

Papers submitted in the competition should be sent to J. M. Gregg, 519 Johnston Bldg., Charlotte, N. C., before January 1st, 1929. Contestants may choose their subjects; but a list of suggested topics is available from Mr. Gregg.

SLASHING *and* WEAVING DISCUSSED *by* GEORGIA MILL MEN *at* TECH MEETING

GEORGIA TECH was again the meeting place of the Textile Operating Executives of Georgia, holding the annual convention on Tuesday, September 18th. A splendid crowd was present, and the discussions, devoted to spooling and warping, slashing, weaving and the cloth room, developed some valuable information. A complete report of this discussion will be found in the following story.

Frank S. Dennis, manager, Consolidated Textile Corporation, LaFayette, Ga., presided as general chairman. The spooling and warping discussion was conducted by Frank E. Heymer, superintendent, Eagle & Phenix Mills, Columbus, Ga.; the weaving by Frank K. Petrea, superintendent, Swift Mfg. Co., Columbus, Ga.; while George S. Elliott, assistant superintendent, Pacolet Mfg. Co., New Holland, Ga., had charge of the slashing discussion program.

After the invocation by Mr. Petrea, when the meeting opened at 9:30 o'clock Tuesday morning, Mr. Dennis announced that the sessions would be devoted exclusively to practical discussion, based largely upon reports on different questions which had been submitted to many of the members. He turned the meeting over to Mr. Heymer, who took up the questions on spooling and warping, in order.

Electrical Stop Motions on Warpers.

The first question was, "Have you improved the work of your warpers by making any changes in your stop motions?" Marion T. Grimes, superintendent, Chicopee Mfg. Corp., Gainesville, Ga., was first called upon, submitting the following report:

'Since our mill was in the beginning equipped with high speed warpers, we have done nothing to the stop motions to improve their work. I might say that the warpers are equipped with electrical stop motions of the single bank drop wire type. Running directly over the stop motion is a buzz fan. This fan travels the entire length of the stop motion, while the warper is running, blowing the lint from it and thereby keeping the drop wires free of foreign matter, which allows them to drop freely when an end breaks. I consider the electrical stop motion, and the fan to keep it clean, a great improvement over the old-style mechanical stop motion, whether it be used on high or slow speed warpers."

Following Mr. Grimes, Mr. Dennis said that "we recently installed a single bank warp stop motion of the type similar to the one used on looms, on our slow speed warpers, running 40 yards per minute. The idea being that we wanted to get better stops and do away with the tendency of the ends to become lost. We installed these warp stop motions about ten days ago, and I have been watching them very closely, and also the overseer in charge of the warpers has been watching them, as well as the warper tenders, and so far as the reports to me come in, this motion hasn't yet failed to make a perfect stop, so that the end was not lost, but went in perfectly straight. In the slasher room we find it has practically eliminated laps on the slasher, and we believe that the installation of this stop motion on our warpers would mean we could greatly improve the character of the warps that go to the weave room.

"From the standpoint of an investment, it is a pretty good proposition, because the old-style drop wire costs about three dollars less than the new stop motion complete, including the drop wires, and the new drop wires can be bought for a few dollars a thousand. Primarily we installed it for the better work, but aside from that, if it gave the same kind of work, we think it would be a good investment."

"That was installed in back of the comb?" asked Mr. Heymer. Mr. Dennis drew a sketch of the wire, explaining that it is mounted inside of the drop wires, and oscillates.

"I think I heard Mr. Dennis make the statement last night that he has seen it trip when an end breaks at the far end of the creel," said Mr. Grimes. "How heavy is it?"

"About as heavy as a loom drop wire," replied Mr. Dennis, adding that it will stop the warper before the end runs out due to the fact that he is on slow speed.

J. C. Edwards, superintendent, Martha Mills,

Officers Named for New Year

W. HAMES, superintendent, Exposition Cotton Mills, Atlanta, Ga., was elected general chairman of the Textile Operating Executives of Georgia at the meeting in Atlanta on September 18th. Frank E. Heymer, superintendent, Eagle & Phenix Mills, Columbus, Ga., is the new vice-general chairman.

George S. Elliott, assistant superintendent, Pacolet Mfg. Co., New Holland, Ga., succeeds Frank B. Williams as a member of the executive committee. Albert Lehmann, Jr., superintendent, Dixie Cotton Mills, LaGrange, Ga., was elected to fill the unexpired term of Mr. Heymer, who was made vice general chairman. Robert W. Philip, editor of "Cotton," was re-elected secretary-treasurer.

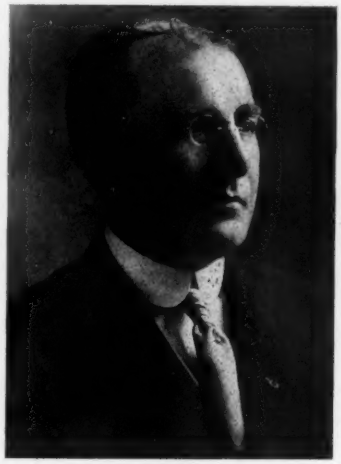
At the luncheon business session, the constitution was altered to provide that each retiring general chairman be made an ex-officio member of the executive committee.

Thomaston, Ga., asked Mr. Grimes if he used this type on his high speed warpers, and Mr. Grimes said, "No, I have a drop wire which is just about the same as the R. I. electrical stop motion on looms."

"We have the electrical stop motion on warpers," said Mr. Edwards "and I was just wondering if the electrical motion wouldn't give you a more sudden stop than any mechanical stop motion." He explained that he runs his high speed warpers 350 yards per minute, and that the motion acts sufficiently quickly to stop the machine before the end leaving the guide comes over the breast roll. "If we can attain that we do not have any crossed ends on the twister," he said, explaining that his warper beams go to beam twisters instead of slashers. "I really think the electrical stop motion is hard to beat on high speed warping." In answer to questions, he said the stop motion is not on the creel, but that there is a single bank drop wire between the creel and the warper. He said he seldom has difficulty with the metal parts corroding and preventing accurate action. "We take the yarn off of a cone; of course we couldn't get that speed warping off of a spool."

Mr. Heymer asked if anyone used an electrical stop motion on the creels. John Klinck, superintendent, Sibley Mfg. Co., Augusta, Ga., said he had used it on chain work, and had little difficulty with corrosion of parts. He said that while his warpers are very close to his creels, due to the slow speed the motion will stop the warper in time.

Mr. Heymer asked if anyone used the motion of the oscillating type on the comb or breast rod. Mr. Edwards said he did, on ply-work warpers, and in answer to a question as to difficulty in picking up ends, said that if the beam makes one revolution there will be what he calls a crow-foot. Mr. Klinck said he had used this on beam dyed work.



Frank E. Heymer, the New Vice General Chairman.

The chairman pointed out that this trouble frequently comes up on the slasher, especially where there is no fan on the warpers and the drop wires become choked with lint, allowing the beam to make two or three revolutions before the warper stops.

E. H. Rogers, agent, Fulton Bag & Cotton Mills, Atlanta, wanted to know if it would be possible to move the stop motion panel back toward the creel, thus getting a longer distance in there. Mr. Edwards explained that with his type this would be impractical, because it would mean coming in front of the beam with the yarn and then going back halfway.

Proper Number of Ends on Section Beams.

The chairman read the next question, which was:

"What do you consider a maximum number of ends that can be safely run on a section beam for good work, taking warp and end separation on the slashers both into consideration?" He called upon Mr. Rogers who explained that he had submitted that question originally, due to some doubt in his mind regarding it. "We are not equipped so we can change one way or the other to any great extent," he said. "However, we find that when we reduced the number of ends as low as we could (under 400) the work seemed to run considerably better on the looms, and also we had considerably less trouble with the drop wires, due to the less crowded condition. We don't have the equipment to let us go as far as we would like either way. We run around 400 ends on practically all numbers, from 7½s to 35s." He said his beam heads are 24- and 26-inch. Mr. Heymer said this was dependent somewhat on the length of the warp, etc. Mr. Rogers said that, "in our case it depends on the capacity of the comb. I understand some mills run 250 ends, and I would like to know about it. I understand this is mighty good where you run high speed warpers. You have a less crowded condition in the comb and therefore less lint."

J. W. Hames, Elected General Chairman.

"We have gone as low as 360 ends, on 32s warp," said Mr. Dennis, "without any trouble in getting a beam that would pull off in the slasher creel. We think we get the best beam with around 400 ends."

V. J. Thompson, superintendent, Manchester Cotton Mills, Manchester, Ga., said he runs 320 ends on 14s.

"We run as low as 337 ends of 30s yarn," said Mr. Grimes, "36,000 yards on a beam. We have found by increasing the number of ends to the beam up to 500, that we do not get the production off of the warpers that we do with a smaller number of ends, due to stoppage."

"We run 280 ends of 15s, 40-inch beam, 27,500 yards, 26-inch head beam," reported Mr. Edwards.

Mr. Heymer pointed out that this is a matter dependent largely upon conditions, as to the supply of material. "We run as high as 450 ends, but it is a case of where

we are short of material," he said. "I prefer from 375 to 425 on yarn from 12s to 22s; there we find we get better results."

Weaver's Knot Versus Chicken Head Knot.

The next question brought up caused an interesting discussion. It was, "Do you find any improvement in your weaving and seconds by using weavers' knots in spooling? If so, is this good effect lasting?"

J. W. Hames, superintendent, Exposition Cotton Mills, Atlanta, was the first man called upon, and read the following report:

"We have had six weavers' knotters in operation in No. 1 Mill for about 18 months, and have had complete equipment in that mill for seven months. We find that it is harder to get fixers to keep up these knotters than it is for the old-style chicken-head knotters. We estimate that these knotters get out of fix 10 to 15 per cent more than the other knotters, but we find that we gain enough in our weaving to offset the trouble in spooling.

"On a recent test on 72x72 sheeting, 23s warp and 23s filling, we find loom stoppage caused by knots to be 84 per cent more on chicken-head knots than on yarn tied with weavers' knots. We do not notice any difference in the amount of spooler kinks caused by the knotters. We are unable at this time to show any difference in the amount of seconds caused by the two knotters, as the yarn goes into the slasher room and the yarn tied with both knots are mixed."

Commenting upon the difference in loom stops, Mr. Heymer observed that, "this speaks very well for the weavers' knot".

R. J. Jennings, Lanett Mill, West Point, was next asked to report. He said, "we find we had practically the same experience as Mr. Hames. We still get good results. About the only thing I can say is that you must keep the knotters fixed, and you have to do it a great deal more with the weavers' knotter than you do on the chicken-head knotter."

George S. Elliott brought out that perhaps this condition is due to the fact that with the old-style knotters, with which the help is familiar, it is customary to let them go until something happens to them, while with the weavers' knotter, naturally more close attention will be paid to their inspection and repair. Mr. Hames said, "that is true—when they get out of fix they are *out of fix*," and Mr. Heymer brought out that any more complicated equipment, to render efficient service, requires more attention and inspection.

"We have adopted the weavers' knot," said Mr. Dennis. "We use it on most of our work; this is reeded 48 dents per inch or finer, and we have noticed that we always get the improvement with the weavers' knot, where the old-style chicken-head knot, as soon as it strikes the reed, will cause that end, or an adjacent end, to be broken. We find a lasting, good effect with the weavers' knot, and we also find that the spooler kinks are practically nothing." He suggested that R. S. Steele, superintendent, LaFayette Cotton Mills, LaFayette, Ga., repeat an outline of a system of inspection he uses, which he had mentioned in personal conversation.

Inspecting the Weaver's Knotter.

"We have a system of repairing the weavers' knotters," replied Mr. Steele. "All of our winder hands—we have high speed winding instead of spooling—are supposed to turn their knotters in to the fixer every day at noon, and he goes over them, spending the noon hour on this job. In that way we keep our knotters thoroughly repaired. It makes the repair bill run up, but it is worth it. We have the weavers' knot and the chicken head knot, and we find the weavers' knot increased our production. We have one chicken-head knotter, and we can find that knot in the cloth every time. The weavers' knotter does the best work for us."

"It does pay to look after the little things," commented the chairman.

"We have the weavers' knotter on ply yarns," said Mr. Edwards, "but not on single yarns. We are on tire fabric, and I never have believed it paid to use the weavers' knot on single yarns where you ply the yarn later. This point hasn't been brought out, but may be of interest: Our labor cost runs 15 per cent higher with the weavers' knotter than with the chicken-head knotter. I think that it is only fair to the help in the mill. Our time-study man gave our spoolers using the weavers' knotters 15 per cent more. We could not get along without the weavers' knot on our ply work. Before we got the knotters we tied the weavers' knots by hand." He added, in answer to a question, that tying weavers' knots mechanically is an improvement over doing it by hand.

"When we equipped our mill with knotters in starting up," said Mr. Grimes, "we did not buy anything but the weavers' knotters. However, we did not buy enough because we had to teach all of our help to wind, with the cone winding system instead of spooling. In order to get the work through the mill we did buy a few of the chicken-head knotters, and I notice that every time the weaver comes to me about kinks, he always brings the chicken-head knots rather than the weavers' knots. We have decided that when we want more knotters we are going to get the weavers' knot type." He added, however, that, different from Mr. Edwards, he pays the same rate with both types of knotters; because, "I believe she can wind just as much yarn with the weavers' knotter when she becomes accustomed to it."

W. R. Holt, assistant superintendent, Muscogee Mfg. Co., Columbus, Ga., next reported: "I would say we made a run of probably 15 to 18 months. We had some 35 or 40 knotters in use, about eight or ten of which were the weavers' knotters. At one time we thought they were a mighty good thing, but we finally found out that it decreased the production of both cone winders and spoolers (we have both) about ten per cent. That necessarily raised the cost in the same proportion. We also found that the repairs on the weavers' knotter were excessive as compared with the chicken-head knotter. At first the hands liked them, but when they found out they cut their pay they didn't want to use them. We went far enough to make weave room tests to see if it would warrant the additional expense, and found there was no improvement in our weaving." He explained that he uses only up to 24 reed regularly, his principal run being on 18 and 20 reed. "Up to 24 reed," he said, "I find it is a useless expense."

Mr. Hames said when he first put the knotters in, he did not get the production, "because the hands thought they would not get the production, and they wanted the old knotters, but after we put in a full equipment production went back up." He said it was due largely to the mental attitude of the workers, and when they learned the old knotters had been shipped away, the production went right up. Mr. Heymer reported a similar experience at Eagle & Phenix.

Preventing Wear on Spooler Tensions.

The chairman presented the next question, which read, "What have you done to offset the wear of the various parts of your spooler tensions?"

Mr. Rogers, who was responsible for this question also, exhibited a spooler tension, explaining that he had had considerable trouble with the yarn cutting the tension—filling-wound warp yarn. He had the tensions dressed out with a file a couple of times, and took the matter up with the tension manufacturers, and they supplied him with some metal plates which were attached to the guides, but after about a year these are beginning to show wear, he explained. He said he had parts of the tension case-hardened and still the wearing persisted.

No one else present seemed to be troubled with this particularly. Mr. Elliott asked if the yarn was pulled off of the end of the bobbin, suggesting that perhaps the spindle might be off center. Mr. Rogers replied that he has them set regularly.

"I use a different type of tension," said Mr. Hames, "but we have recently found that we could get a porcelain guide applied where the yarn drags over the tension and that has overcome that cutting of the steel. We like these mighty well, and equipped several spoolers with them.

"Isn't that something entirely new?" asked Mr. Rogers.

"Yes," replied Mr. Hames, adding that perhaps some of the porcelain people could supply them.

"We have warp wind on spinning, but we had that trouble on winders," said Mr. Petrea, adding that he overcame it by using the porcelain attachment mentioned by Mr. Hames.

Causes of Soft Places on Beams.

The final question on spooling and warping was: "What are the causes of soft places on beams, if the ends are lying a uniform distance in the comb; and what, when the beams are running off on the slasher, causes bunches of ends to run slack?"

F. W. Johnson, Scottdale Mills, Scottdale, Ga., was called upon, replying, "Really, I don't have any trouble of that kind. We have had some to run slack when running out, and we found that the trouble was in the beam being out of line. We had the beams aligned and did away with it."

"After the questionnaire on that was sent out," said Mr. Dennis, "we had that trouble on two warpers. On one of them we eliminated the trouble by tightening the drum on the shaft. In other words, in casting around to find out what caused it, we took the drum out of the warper and sent it to the shop, and found that the drum was loose on the shaft." He had not eliminated the trouble on the other warper, however; and said he did not know, on the first, whether the drum being loose might not have allowed some other condition to exist which was actually causing the trouble. He said the slackness showed up one-third or one-half way between the heads, not on the selvage.

"I have never had that trouble," replied D. R. Senn, superintendent, Enterprise Mfg. Co., Augusta, Ga., when called upon. "We try to keep our warpers in a high state of efficiency, looking after the beam journals and keeping the journals tight and the heads true. We don't throw our skewers and spools away when they wear out—we throw them away before it happens. And we always keep a good man on the warper job, and probably have prevented that kind of trouble before it happens to us."

Mr. Dennis said he runs his beams under, instead of over, in response to a question from Mr. Klinck. This concluded the spooling and warping discussion, and the meeting was turned over to Mr. Petrea for the weaving discussion.

Discussion on Weaving

The first question under weaving asked, "What, according to your experience, is the best method of paying weavers for cloth: (a) by the cut; (b) by the pound; (c) by the pick?" Mr. Heymer was the first man to respond. He said:

Methods of Paying Weavers.

"After an exhaustive study, we have come to the conclusion that, in a colored goods mill, the best method is to pay by the cut, as each piece of goods is taken off in short lengths. The mills making rolls of 200

Frank S. Dennis, Retiring General Chairman.

and 300 yards will find paying by the pound the better method. But in our mills I find the best method is paying by the cut. On a day and night run I have found that the only correct method, in justice to the mill and the employee, is to pay by the pick. We have tried all ways, and there is always complaint on account of the different weavers claiming a quarter-cut, half-cut, etc., at the end of the week. The consequence was we put them on by the pick, and I have found that without exception that is the best method."

Variation in Length of Cuts.

"Well, how much do your cut lengths vary?" asked Mr. Rogers. Mr. Heymer replied that he makes all of them 64.5 yards on the slasher. He thought the reference was to this, but Mr. Rogers explained that he meant the length of the goods; stating that he had found a variation of as much as ten yards between the cut marks, and that he believed this was probably due to the slasher slipping. Mr. Heymer pointed out that some of the difference in cut lengths would be due to different tensions on the loom, dif-

ferent constructions, etc., and that this variation should be about two per cent. That, said Mr. Rogers, should not cause a variation of more than two per cent, but that the variation will frequently be from say 48 to 59 yards, and that a large part of this is attributable to the variation in the marking of the ordinary cut marker. Several other men present indicated they have that much variation.

"The way we got around that on our class of goods was to eliminate the cut marks altogether," said Mr. Dennis, "and now we pay by the folded yardage. In other words, we pay by the folded cuts of 60 yards. We stamp it with a fugitive dye near the selvage, which comes out in the finishing processes and is not seen afterwards. Checking the pay roll and the production records shows a close comparison." He explained to Mr. Petrea that he referred to folded yards of gray goods, as he does not have a finishing plant.

"I imagine that part of it is caused from this: the measuring roll on the slasher is moved entirely by the friction of the yarn, and if there is any binding there will probably be some slippage over the measuring roll and cause this variation," suggested Mr. Riviere.

The chairman at this point reverted to the methods of payment, and read the report of J. A. Sorrells, superintendent, Gainesville Cotton Mills, Gainesville, Ga. Mr. Sorrells pointed out that most mills want a double cut of cloth in one piece before it is taken off the loom, and that in every case this cannot be done every day, it sometimes being necessary to carry a weaver's pay over until the following week or when the cut is completed. Also, he said, it is troublesome if a weaver is out for a day or two, to make adjustments mutually satisfactory. He favors paying by the pick, using pick counters, so that everyone will get what is coming to them every day.

Here Mr. Petrea asked for a show of hands as to the methods of payment. All but two men present were paying either by the cut or pick. One of those paying by the pound was W. L. Underwood, overseer weaving, Shawmut Mill, Shawmut, Ala., who reported as follows:

Paying by the Pound.

"I can hardly give in detail the method. Of course the speed of the loom, weight of the goods, etc., figure into the method. I find it an advantage as if the weavers filling runs out of the loom, it keeps on running, and is still making picks, but that gives him no undue advantage in paying by the pound. We used to pay by the yard, but the weavers, some of them, would get in the habit of pulling on the pick up gear, and that doesn't help them, in paying by the pound."

"We find it is a better method to pay by the pound," said Mr. Clayton, of Mary-Leila Cotton Mills, Greensboro, Ga., "because we take off the cloth in large rolls. We take it off once a week. We have eliminated our cut marks altogether, and we feel like it is better, in justice to the weaver and mill, to pay by the pound. We would rather pay by the pick, but we do not have the pick counters as yet. The variation in the weight of the goods is something that would make it unfair to pay by the cut, I think."

Likes the Pick Counter Method.

J. M. Simpson, overseer of weaving, Hillside Cotton Mills, LaGrange, Ga., said, "I have had 966 looms on pick counters for twelve months. Up until then we paid by the yardage, and I wouldn't go back on paying by the yard or pound for anything, because we get from ten to fifteen per cent more production paying by the pick counters, and everybody gets just exactly what is coming to them. We read the pick counters once a week, every Friday morning."

At this point Albert Lehmann, Jr., superintendent, Dixie Cotton Mills, LaGrange, Ga., submitted an extensive and interesting reply to this question, prepared as follows:

Lehmann Pays by the Yard.

"We have had experience with paying by the cut and by the pound, but not by the pick. A good many years ago, we paid altogether by the cut, but found it very unsatisfactory, and do not feel it is necessary to take up the time to describe the faults of this system of paying the weavers, for if you are paying by the cut, you know the troubles which it causes, and if you are not paying by the cut you will not be interested. We believe that paying by the pound is much better than paying by the cut, but there are some objections to this method and we finally went to the method of paying by the yard. We have never paid by the pick so we cannot pass an opinion on this method. We pay altogether by the yard.

"We make a highly competitive fabric and one which we find the customers are very critical of, for certain defects in the fabric will make seconds for them, as most all of our fabric is either bleached or dyed or made into different articles which go out to the trade, and our customers are not any more anxious to make seconds than we are. Therefore, they expect an extraordinarily high class fabric. Of course, this is not an unusual condition, as most of the fellows here will possibly feel that they are in a class by themselves when it comes to a critical customer.

"Our method of paying weavers is as follows:

"Before going further, I might mention that we do not have a system of fining when a weaver makes bad cloth, as he is paid so much per hundred yards according to the class of fabric which he makes, the cloth being classed A, B, and C. The A fabric has a ten per cent premium over the base rate, the B fabric having a ten per cent deduction from the base rate, and C fabric, which is caused by carelessness of the weaver, is paid at one-half the base rate. We have found this a very satisfactory method, for we have eliminated any argument as to whether a man was fined too much and one man being fined more than another for unsatisfactorily made fabric.

"There is no such thing as perfect cloth, and the A grade fabric is not always a perfect piece of cloth, but for all practical purposes it is. The B grade fabric is firsts, and also for the practical purposes is acceptable to the customer. C grade fabric is classed as seconds, and is paid for at one-half of the base rate. For instance, if the base rate is $1.50 per hundred yards, for a second, or C grade cloth, the weaver will be paid 75 cents per hundred yards. We find that this bonus of ten per cent above the base rate for A grade fabric is an incentive to the weavers for better work.

"We have approximately 30 weavers and under this system, we frequently have each week, ten to fourteen who do not make a single yard of seconds, and we have a system of attaching a flag to each stand of looms from which no seconds have come during the current week. They are changed each week.

"You will no doubt be interested in knowing how this base rate is figured. The picks per minute based on 90 per cent efficiency for Draper automatic looms, are used as a standard and form the base rate. This is very easy to figure, as you know approximately what you want your weavers to earn per week, and the A fabric will be ten per cent above, the B fabric ten per cent below this base rate. We find that paying by the yard makes the weaver more careful in taking off the rolls from the loom and keeping the ends of the cloth clean, thereby eliminating one source of loss which you would have under the pick, pound, or cut method. We also find on the start up of the loom that they are more careful to get the loom started to operating perfectly as quickly as possible. The loom fixer is interested in seeing that no seconds come from his section, because he too is paid the base rate, plus a graded bonus, depending upon the amount of seconds from his section."

"In paying by the pick, do you make any difference in

the rate paid on say 10-ounce and 16-ounce fabric?" asked Mr. Underwood.

"It depends on the speed of the loom," replied Mr. Simpson. "If they are making the same time it doesn't make any difference. My weavers run 30 looms, regardless of the weight the rate is the same. The number of harness does not make any difference, either."

What Causes Crooked Cloth?

"What makes cloth weave longer on one side than the other?" was the next question asked by Mr. Petrea, who explained that this might also be called "wavy selvage" or "crooked selvage." He called on Mr. Klinck.

"Inasmuch as I asked that question, I don't think I can be expected to answer it," said Mr. Klinck, adding that he can find this kind of cloth, and go back to the loom and find it running all right. He said he has this on 32-inch to 42-inch goods, not so much on the wider goods, and not particularly on the lighter weights. Mr. Petrea read here the reply of J. B. Williams, superintendent, Augusta Factory, Augusta, Ga.:

"There are several things that will cause a slack selvage. First, the selvage being piled on the loom beam from the slasher. This is caused by one of five things, namely, beam head out of line, slasher comb not being adjusted, ends not being leased right in the comb, threads drawn in three to the dent, or fine and coarse yarn mixed. I think however, that the main reason is that the weaver lets the cut mark run over say 20 yards and takes his cloth off and pushes this 20 yards 'that has run over' to one side, winds his traverse and starts his cloth around one side of the tin roll, very often leaving out a little rod that holds the cloth up against the tin roll, the tin roll being worn almost smooth does not hold the cloth. This causes a backlash which will cause the cloth to be woven a little out of line. You can notice the slackness when the cloth is being run over the calendar or to be folded. I have never had but one complaint of cloth running slack on one side, and after investigating the cause I found that this was the explanation—on a heavy pick piece of two-yard ticking."

J. J. SCOTT, president Cotton Manufacturers' Association of Georgia; Theo. M. Forbes, the secretary; George S. Harris, past-president, American Cotton Manufacturers' Association; P. E. Glenn, secretary-treasurer, Exposition Cotton Mills, Atlanta; and J. Murphy Gregg, secretary-treasurer, Southern Textile Association, were honor guests at the Georgia meeting luncheon on September 18th.

Messrs. Harris and Scott spoke briefly, congratulating the operating executives on their progressive work, and pledging the cooperation of the financial executives in carrying it to further attainments. Their presence contributed much in the way of influence and inspiration at the meeting. A more intimate interest on the part of the mill presidents in the work of the practical men's organizations, should be encouraged.

The next report was from C. K. Cobb, assistant superintendent, Canton Cotton Mills, Canton, Ga., who said:

"The first source from which this trouble might arise is the slashers. The tension on one side of the slasher being greater than on the other, causing uneven stretch on the warp would therefore cause uneven contraction on the loom. If the press roll on the beam is not evenly weighted one end of the beam will be pressed hard and the other end will be soft. This soft end will build up larger and will necessarily be slack when it unwinds from the beam, and cause the cloth to weave one-sided.

"There are several sources on the loom from which uneven cloth might be made, for we made some tests to prove that the loom was partly responsible for slack selvage cloth, as we term it. First, if the cloth roller is too low at one end, the cloth will weave one-sided. I find it best to replace both blocks at the same time, then match up the old blocks that are not worn out, and use them together. Second, when the bearing on one end of the sand roll is worn down, it will cause the cloth to wind tight on one side and slack on the other. The only remedy in this case is to put on new bearings. Third, the whip roll stand may be out of line, making the whip roll high at one end and low at the other. Fourth, the sand roll not being level will cause the same trouble as the whip roll not being parallel.

"Last and roughly speaking, any part of the loom frame on the front side being loose will cause the cloth to weave longer on one side than the other. If one end of the loom beam is fastened securely, and the other end is loose enough to vibrate materially when the lay beats up the filling, the cloth will again weave one-sided. I might state that anything that puts greater tension or strain on one side of the warp, either before or after getting onto the loom beam, will cause the resulting cloth to appear as though it were woven longer on one side than on the other. If anyone who hasn't tried it would like to get an idea as to the effect of tension in weaving, let him run one cut (between the cut marks) as slack as he can run it, and the next cut as tight as he can run it (between cut marks) and measure the two cuts of cloth, and also note the weight of it. Then figure in your own mind what happens when the tension is not the same on both sides."

"The first thing is to watch the slasher," suggested Mr. Heymer, "to see if the tension rolls and the presser rolls are putting on an equal tension. A high harness on one side stretches the warp to a certain extent. A temple roll choked up will make a loose selvage. About a month ago we had a complaint that the selvage was rolling. When the piece came back, it fortunately had the loom ticket on it, and we looked up that loom and found a broad temple roll completely choked up. We cleaned it out and remedied the difficulty. A high or low whip roll, sand roll beam out of line, worn bearings, anything giving too much friction on one side, will cause this trouble."

H. H. Hughes, Swift Mfg. Co., Columbus, Ga., asked Mr. Klinck if he had any method of detecting these goods before going to the customer, other than rolling them out on a long table. Mr. Klinck explained that his cloth goes up over rolls before it goes through the brusher, and that the defect can be seen there.

"Does running it through the brusher tend to correct that trouble?" asked Mr. Rogers. Mr. Klinck replied that it does to a certain extent.

Homer Carter, superintendent, Pepperell Mfg. Co., Opelika, Ala., said they had recently installed a shearing machine, and that in running the cloth between the knife blades on this machine this trouble is noticeable. Mr. Rogers suggested running it three times through the brusher before shearing, and Mr. Carter replied that it passes through the shearer first.

Referring to the original question, Harry Horne, superintendent, Walton Cotton Mills, Monroe, Ga., said he had found that some weavers start the roll on incorrectly, this trouble showing up for about the first fifteen or twenty yards.

To further complicate the situation, as he put it, Mr. Klinck said that his looms have the batteries on the right hand end, and that all of the slackness is on that side of the cloth. Well, said Mr. Petrea, he has it on plain looms as well as those with batteries.

"Have you looked at your slasher cylinder to see if there is any bulge in it?" asked Mr. Riviere. "We found that might cause it. There is another place it might start and that is on the warper. If the section beam is wider than the drum of the warper, one selvage will not be compressed properly and the yarn will be higher. I have also seen it run slack on one side because of a bulge in the

slasher cylinder which would cause this condition."

"Does anybody have it on anything except three- and four-harness work?" asked Mr. Cottrell, of Swift Mfg. Co. "Yes," replied Mr. Klinck, and Mr. Riviere added that he has had it up to 12-harness. Mr. Cottrell said he had it on nothing except three- and four-harness.

"We find that if the cloth roll blocks are worn on one end the cloth will not wind on straight," said Mr. Dennis, "but we believe that most of it comes from the slashers; sometimes perhaps where two different widths of beam are being run, the distance is not divided properly on the slasher, and that will cause the yarn to stretch a little bit and weave a little longer on one side."

"Have you tried looking over the lay to see if it is out of line?" asked B. C. Gillespie, overseer of weaving, Consolidated Textile Corporation, Pelham, Ga. "We have had quite a bit of this on two-, three-, and four-harness work, and in every instance I found that the lay was out of line." He suggested putting in new Pittman arms and setting the lay properly to eliminate this trouble.

"I might say, since our weaver is here," said Mr. Petrea, "that the thing he did at our mill to do the most good was to put on a new sand roll tin. I think he re-covered the sand rolls with new tin which helped us."

A member said he has this trouble on heavy pick filling sateens, but not on broadcloths. "It may be you are having trouble on the heavy goods because the tin is not heavy enough to take this heavy goods up," suggested Mr. Riviere. Mr. Dennis here brought out that he has found it advantageous, in searching for the answer to a trouble, not to try to single out one especial cause, as it is frequently a combination of several that give the undesired result.

Mr. Underwood said he has much of this trouble, probably because he is on heavy duck. He has one man to follow up things like this.

Ways to Avoid Broken Filling.

Passing along, Mr. Petrea submitted the next question, which was, "How do you keep bobbins in proper alignment in the shuttle to avoid broken filling?" In answering this, Mr. Gillespie said that the biggest cause of this was a "mis-change." He has found it helpful to keep the bobbins straight in the shuttle, keeping the springs tight, with the proper tension, and to keep the shuttles brushed properly. He mentioned that he has his loom fixers inspect his shuttles each week.

E. B. Wise, superintendent, Martel Mill, Egan, Ga., said he thinks this trouble is due largely to the kind of shuttle used. He said last August he went to a mill with a high percentage of seconds, and that he found that while the bobbins were in the shuttles all right, they were too large, and that in traveling back and forth, the filling would work out from the spring. He changed the amount of filling on the bobbin, also changing the taper, and cut the seconds down ten per cent in three days.

W. S. Smith, overseer of weaving, Pacolet Mfg. Co., New Holland, Ga., was called upon, and said in his opinion, "you must keep the springs tight so as not to allow the bobbin to vibrate, and you must have it in proper line. If you don't, on the change it will break. You must have the filling made right; it must be of the proper size, and the spring cover must be kept tight. That is one thing we found to cause a lot of filling to break. The cover will get loose, but not loose enough to be noticeable. Taking it for granted that the filling is correct, and is put in the quill properly, most of the filling breaking is caused from vibration, and most of this vibration is so small that it can't be seen; if it was very much it would be noticeable."

"There is another thing that came up," added Mr. Elliott, "and that is warped bobbins, after the bobbins had been subjected to the high humidity conditions of the weave room and warped. That was one of the things that gave us trouble in addition to the springs. We have taken that up with Draper, showing the relationship between the number of ends broken while running, from warp and filling, and I was rather surprised to find that the greatest trouble, after eliminating the bobbins that were warped, was due to loose springs. They have sent us two shuttles—and they have two at the Gainesville mill—with which they hope to eliminate this condition. The spring cover screws have some extra nuts put on the bottom side. We are running these now.

Mr. Petrea referred to the value of having the shuttles examined regularly, and an inquiry showed that most of the men present follow some method of examining shuttles to keep them in good shape. Mr. Edwards suggested an examination of the bobbins, also, pointing out that a hundred bobbins scattered over a weave room could cause a lot of trouble if not of the proper kind.

The Multiple Weaving System.

The next question aroused the greatest interest of the meeting. It read: "In putting in the multiple system in the weave room:

(a) how many bobbins per minute can a battery hand put in?
(b) how many loom stops per hour can a weaver take care of?
(c) how many bobbins of filling can be put in stands by filling hauler who takes up his own empty quills.
(d) how much loss in production may be expected in changing to the multiple system?

The first answer was from the Mary-Leila Cotton Mills, Greensboro, Ga., which read as follows:

"Our battery hands can put in 428 bobbins per hour. Our weavers take care of 303 stops per ten hours, which equals 36 stops per weaver per hour. We have eliminated all filling haulers, putting this work on the battery fillers. We have other men to take up the empty quills. Our experience has shown a slight increase rather than a loss in production. Our weavers run 84 40-inch looms on the following constructions: 40-inch, 44x44, 5.50 yard; 40-inch, 44x40, 5.50-yard; 40-inch, 40x40, 6.00-yard, and 38-inch, 40x40, 6.35 yard. Our warp yarn number is 24s, and our filling numbers are 23s to 27s. All of our looms are 40-inch and run 160 picks per minute. We put in the multiple loom system with our own organization, and have been running day and night with this system for several months without any friction whatever."

W. L. Phillips, superintendent, Social Circle Cotton Mills, Social Circle, Ga., made the next report. Answering the (a) part of the question, he said his weavers put in seven bobbins per minute; one battery hand filling 44 90-inch loom batteries, in which the quills run six minutes each. Answering (b), his weavers can take care of 36 to 40 stops per hour. He has weavers running 33 90-inch looms, with 350 to 400 stops in ten hours. As to (c), he does not use a filling hauler, the battery boy getting his own filling. As to (d), he said there should be no loss. He said he hasn't got an increase, but has the same production as before. He added that there was a material decrease in the per pound cost.

If Your Goods Are Going to a Finishing Plant—

THEY should be of the invoiced yardage. The finisher checks every bale received.

When the cloth is to be dyed with sulphur colors, leave the small oil spots in. Trying to rub them out makes them bigger. When the goods are for bleaching it's all right to take them out.

Don't use insoluble mineral oil in your size. Magnesium chloride is also injurious.

When the cloth is for napping, be sure to have an even-twisted filling.

Don't let any wrinkles go over the emery rolls on the brusher. Abrasions in the finishing plant will make troublesome defects.

Some finishers prefer not to have drills and twills brushed before receiving them. Others don't.

Watch out for condensation drip in the weave room on humid days and at other times. It will cause trouble with the goods in the finishing plant.

These are some of the suggestions brought out by John A. Simmons, agent, Lanett Bleachery & Dye Works, in a very constructive and helpful talk to the mill men at the Atlanta meeting on September 18th. His remarks, and the reception accorded them, provide a striking illustration of the advantages possible in a closer understanding between mill and finisher.

Mr. Elliott asked if the figure of 44 batteries was the maximum amount a hand could fill, and Mr. Phillips replied that, "that is what they are really doing. It is not the maximum. We have them arranged in cycles. In the middle of the weave room we have a filling chute, and the box fits under this chute, and the hand makes his rounds in such a manner that when his box is empty he is back where he started from. We use 23s filling."

Marion T. Grimes, of Chicopee Mfg. Corp., was next called upon. His report follows:

"(a) A battery filler, filling batteries alone, can place in the battery approximately 11½ bobbins per minute. However, our battery fillers must get their filling from trucks rolled into the weave room from the spinning room, and this of course takes some time. We therefore figure that in ten hours a battery filler will place in the battery approximately 6,000 bobbins or an average of ten bobbins per minute.

"(b) This naturally depends upon the cause of the stoppage. However, in making a test, I find a weaver can take care of approximately 50 stops an hour. This does not mean that our weavers are doing this, but merely tells what can be done. On our work, gauze and bandage, 30s and 40s yarn, it is a question as to how many looms can a weaver keep running, not by merely starting a loom when it stops, but to find the troubles which will cause the loom to stop and remedy them before the loom does stop. This is done by the weaver spending a great deal of his time in the warp alleys and not all of his time in the weaver's alleys. Battery hands who are paid by the piece will also help to keep the looms going. It is very natural for them as they go through the alleys to start a loom when they come to one which is stopped.

"(c) We do not have filling stands in our mill, and I am unable to answer the question. Our filling is placed inside of the weave room and from this point the battery filler secures the filling and fills the battery from a truck rather than from aprons as some battery fillers use.

"(d) Our weaving was started practically as it is now running. My opinion is there should be no loss in production in changing to the multiple system providing it is worked out properly before the system is put in operation."

In addition to his prepared report, Mr. Grimes stated that his weavers run 90 looms each, on 20 x 16 to 44x40 goods. He pays the battery hands, as well as the weavers, by the pick.

"Nobody has said anything about quality," said Mr. Senn.

"The quality should be better," answered Mr. Phillips. "This gives the weaver a chance to look after the things that cause seconds, if he doesn't have to spend his time filling batteries, etc. He has a chance to catch the cause of the defect before it makes it. When we started up we had six pick-out hands to take care of these defects, and now we have only one who does less work than the six used to do."

"On the other system," said Mr. Grimes, "the weaver waits until the loom stops."

"Do your weavers take off the cloth?" asked Mr. Petrea.

"No, they do nothing but draw in threads, start up the looms, and of course flag them," replied Mr. Phillips. "I have 386 broad looms. When we started we had thirty weavers, and today we have twelve, and I hope to reduce that to nine. . . . Our battery hands could put in more than seven bobbins per minute, but the way our mill is arranged they would have to take either 44 or 66 looms, and 66 is too many. We have some on 72 narrow looms on pillow tubing."

Mr. Jennings asked who got the blame for mixed filling in case a weaver's set carries several different kinds. Mr. Phillips said this is charged against the battery hand, whose duty it is to put in the right filling. Where several kinds are used, he said, the best method is to have cans at the end of the looms for the battery hands to get the filling out of. He said it is just as easy to teach a battery hand to select the right filling as it is to teach a weaver to do the same thing.

General Chairman Dennis explained that the idea of the committee in shaping up the question was to deal with the fundamentals most men have to solve. For instance, he said, "if you know the number of loom stops per hour a weaver can take care of, you know how many you are having and can see if the system can be adapted with profit. The same thing applies to how many bobbins of filling a battery hand can put in, etc." He added about two years ago they were on 68x80 drills, but are now making 100x60 broadcloths, and the situation as to the multiple system is entirely different. He has made some time studies and finds that a weaver can take care of 30 stops per minute, as an average, and that battery hands can put in twelve bobbins per minute, taking them from the spare floor. He found no loss in production except possibly for a week or so.

"There is one thing the weavers must be gotten out of," he said, "and that is the habit of nursing the batteries. Frequently they will have two or three looms standing, but will do this before giving them attention."

Mr. Heymer made the next answer to the question. He began by saying that "we had to prepare our work, going back further than the weave shop. We went back to the card room, and even to getting a better cotton. Then in the spinning room we overhauled it thoroughly to make good warp and good filling. At first we tried it on one weaver, and the next week two more weavers came to us and asked for a place on the same work. Inside of three

weeks we had every weaver wanting a job on more looms. We increased the number of looms one hundred per cent. Answering the questions in order:

(a) 540 bobbins per hour can be placed.

(b) average weaver can take care of 40 stops per hour.

(c) 3,000 bobbins per hour, taking up his own quills.

(d) there is no loss in production, and there shouldn't be. In fact, our production is increased since we put the system in force. The battery hands take care of 36 to 40 looms. We use 12s warp and 14s filling. We have blocked out these looms so that each weaver has a few looms using 6s filling. Fortunately we can do that.

"I am going to try another room where we have only one kind of filling. As to the balance of the mill, I have studied to see how I could do it, but our filling runs from 3½s to 25s, all kinds of colors, but I still believe that it is possible to do it even there."

Mr. Elliott asked whether the looms were in a straight row. Mr. Heymer replied that his are; Mr. Grimes said his have two alleys, while Mr. Phillips uses four alleys so as to prevent the necessity of re-tracing steps.

In concluding the discussion on this subject, Mr. Phillips said that, "if any of you are considering starting this multiple system, I will give you my own experience. Last November when we started on this system, I made eight trips over into South Carolina and went through some of the best-run mills in the South in order to get some dope on it. All of the South Carolina men told me not to start on it until I was 'right' and ready for it, going back to the carding and spinning and getting everything right. In starting it up that was our intention, but we were so enthusiastic over it that we changed right off of the reel, and doubled up on everybody one Monday morning. I changed before I was ready for it, and our production went down 25 per cent, and stayed down for two, three or four months, and I didn't have a person in the mill who wanted to go on it because they thought it meant a cut in their wages, and giving them more work. But after we started on it we went through with it, and today I haven't a man who would go back to the old system. We had to go back to the cotton patch to get the best results."

The next question asked, "When using a friction let-off on looms, which is better—rope or chain? If the chain, which is better, a round or flat link?"

Mr. Eldridge said he uses the round chain; Mr. Klinck the flat link. Mr. Heymer reported that up to 2.50-yard goods, he found the flat chain best, but on heavier numbers the round 1-0 chain gave him the best results.

Reducing Cost and Waste on Duck.

"What is a good method of reducing the waste and cost in weaving hose and belting duck?" was the final question on weaving. A. B. Baker, superintendent, Georgia Duck and Cordage Mill, Scottdale, Ga., made the first response. He said he was on belting duck. "Our looms were originally equipped with 18-inch beams, and of course we increased the size of these to 32-inch, to get more warp, and we get three to four cuts to the beam, and that eliminates stoppages and tying-in cost, and cost on the beamer. Then we increased the size of our shuttles. Our original equipment was 18-inch, and we changed to 20-inch and then to 22-inch and I expect to use a still larger shuttle." He explained that his looms are so arranged that he can allot only two looms to the weaver. While on the 20-inch shuttle, he said, he got 22 changes per minute, and now has 17 changes per minute with the 22-inch shuttle, and hopes to cut this down to 12 or 13 changes per minute with a larger shuttle. His filling waste figures about ½ of one per cent, he said.

Mr. Underwood, of Shawmut, reported practically the same character of changes, increasing from a 22-inch to a 23-inch shuttle, and lengthening his bobbin by 1½-inch. Also, he said, he arranged his looms so that his weavers now have four looms on hose and belting duck; as against two each on each type formerly. This, he said, cut his cost, but raised his waste a little bit.

This concluded the weaving discussion, and the morning session. The usual luncheon was held at 1:00 o'clock, this being reported upon another page.

Afternoon Discussion on Slashing

Four questions on slashing formed the basis of the planned discussion which was held in the dining room following the luncheon. George S. Elliott, of New Holland, Ga., conducted the discussion, and submitted as the first question the following:

"What is your idea of the proper covering for squeeze rolls on slashers? If woolen cloth, give weight per yard and length of blanket when starting. If worsted yarn, give thickness of cushion. Also, what do you think of the possibilities of cork and rubber for this purpose?"

R. S. Steele, superintendent, LaFayette Cotton Mills, LaFayette, Ga., was the first to respond. He first pointed out that the object of the squeeze roll is to separate part of the size. "You cannot afford to put it all on," he said, "and yet you want the original, round form of yarn, and you must have some means to do that. The cushion on the roll is supposed to be sufficient, with the pressure of the squeeze roll, temperature of the size, etc., to leave a certain percentage of size in the yarn, and not damage the yarn.

"My idea of covering a squeeze roll is that first, the squeeze roll must be smooth; then put two yards of plain cloth on and then put a few yards of woolen cloth—and I think woolen cloth is the best covering for squeeze rolls. Then use your own judgment as to what you wish to arrive at. At our mill we put two yards of plain cloth and then five yards of 18-ounce all-wool cloth. We are making 24½s yarn and put on 13½ per cent size, and we find that this leaves our yarn in the best shape for the after-processes." As to worsted yarn, he had had no experience, and could not see how cork or rubber could be used for this purpose. Summing up, he repeated that "I feel that the woolen blanket is the best covering for squeeze rolls."

The Worsted Yarn Covering.

R. D. Harvey, assistant superintendent, Pepperell Mfg. Co., Lindale, Ga., reported next on the use of the McGann concentric slasher roll—the worsted yarn wrapping referred to in the question. He said he has 16 slashers, and 11 are equipped with this type of covering. He has run one for two years, and plans to equip the remainder with it.

"Do you find the woolen yarn gives you better results?" asked Chairman Elliott.

Mr. Harvey replied that it is cheaper, and that since

(*Continued on page* 1363.)

A Continuous Cold Bleach for Piece Goods

A Method Described for Use Without the Kier Boiling; And Some Pointers for Users of the Kier System

By Thomas F. Hughes

THE BLEACHING of cotton piece goods without kier boiling is a subject in which I have especially interested myself, and I am glad to outline my experience with it in this article.

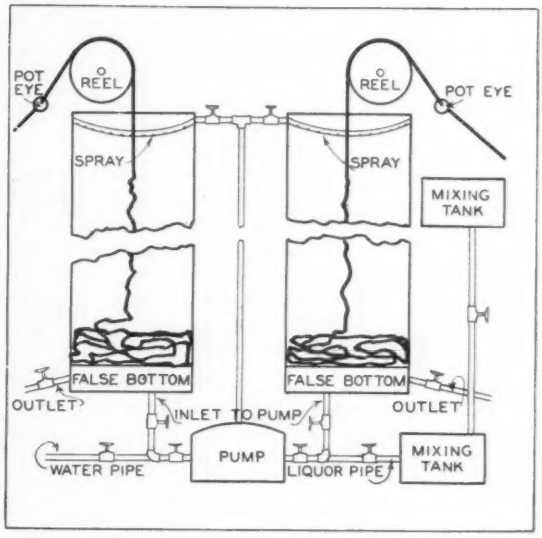
In using the continuous cold bleach without kier boiling goods of every description can be bleached, such as, colored yarn goods, rayon, yarn and heavy duck. Good results are obtained on heavy duck as the goods are not crushed in a kier, thus preventing crash marks such as "devil or crows' feet".

The goods are laid out in the gray room where they are marked and sewed together before being singed. If the goods are not to be singed they can be run through the machine with the flame out. Singeing consists of passing the goods rapidly over a series of gas flames, or over heated copper plates.

The first type of machine is called the open type of singer. It may be so arranged that a group of flames singe the face of the cloth while the other group of flames singe the back, or they can be arranged so as to singe only one side of the cloth. The second type is known as a plate singer, the cloth being passed over two or three open flames, or it can also be run over six drying cans, before passing over two or three copper plates heated to redness. This process of singeing is performed in order to remove the nap or fuzz which appears on the surface of the cloth.

The goods, from the singer, pass through the water box so that all sparks are extinguished. A de-sizing agent is placed in the water box and kept at the proper temperature. Care should be taken to see that the enzyme is kept up to strength and at the proper temperature. If possible, the goods should be left in bins or boxes over night. This will allow more of the starch to be turned into soluble sugar, making it easier to wash out. They may be given the cold bleach after standing a few hours if a quick acting enzyme is used. There are some enzymes that will give this action in two hours if the goods are kept covered up so as to keep the heat in.

The goods are next placed in wooden tubs 9 x 10 feet, with a false bottom. The tubs are arranged in units of two each with a centrifugal pump for pumping the liquor and for circulation. A reel is placed over each of the tubs and a platform built where a boy stands and piles the cloth as it comes over the reels and goes into the tubs. When the cloth begins to pile up the pump is started, throwing a spray over the goods as they enter the tub. After the tub is filled to within a foot of the top the pump is allowed to run for three hours. At the end of this time there should be a perfect absorbent white due to the special liquor prepared for this purpose. The reason for having two tubs in a unit is that after one is bleached we start filling the other, pumping the liquor from the first kettle and building it up to the proper strength before finishing the second tub.

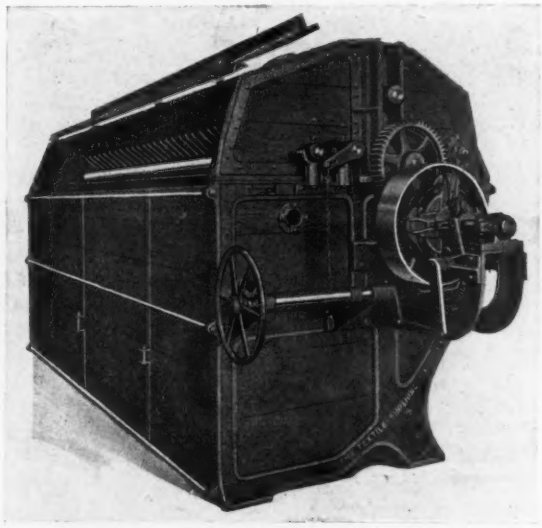


Sketch Showing Outline of Pumping Arrangement.

The cloth, after leaving the tubs, passes through a scutcher with an opener and a brass and rubber roll. In this mangle is placed a solution which washes out the chemicals previously used on the cloth. The cloth passes through a six-box washing machine for the final washing, and is then now ready for dyeing. When heavy duck is treated in this manner it is well to give it a light bath in sulphonated oil and soda ash to soften it before dyeing, and to allow several hundred yards to run on a truck.

In bleaching by this process I have found there is a great saving in time, labor, and, above all, there is no steam used. The cloth is not pulled around the bleachery, thus preventing frayed, damaged or bias goods.

For very light goods



Type of Machine Used in the Continuous Cold Bleach.

such as voiles, organdies, nets and gauze, the rope form of machine may be used, as there is no danger of getting crash marks on light goods.

Kier stains are often a source of trouble in a bleachery, and it is evident that this process eliminates them. Some bleacheries run year in and year out without having to re-boil any goods, while some have several re-boils each day. At this time when bleacheries are trying to get goods out in the shortest possible time and at as little expense as possible, it does not pay to re-boil goods.

For those who are using kiers I might add a few lines that will be of general interest. One of the commonest causes of kier stain comes from uneven boiling, and the stopping of circulation, also the uneven piling of the goods in the kier itself. Kier pilers are being used in several plants with success as they pile the goods uniformly in the kier. In many cases water is used in connection with the kier piler, but the charge of caustic is much better to prepare and saturate when the kier is full. More than four per cent of caustic will have a destructive action on the cotton and decrease the yardage. It is always best to use a good kier oil to form an emulsion with the caustic as it prevents the top of the kier drying out and forms a soap that gives the goods a good scouring.

Goods bleached by the cold process seem to have more body than when boiled several hours; there is not much loss in weight or yardage; in most goods there is a considerable gain.

Public Utilities and Publicity.

The investigation of the electric power companies by the Federal Trade Commission has yielded several developments not generally expected. One is that it is a "real" investigation, it having been contended while the matter was before the Senate that a reference of the subject to the commission would mean the making of a merely perfunctory inquiry. The inquiry to date proves that a subject of the kind can be investigated much more intelligently by a body like the Federal Trade Commission than by a Congressional committee. This should be no surprise, for previous investigations prove the same thing. Probably the most surprising developments are those having to do with propaganda activities by public utilities groups. Hired "publicity men" have recounted, almost boastfully, how they got thousands of columns of reading matter, printed as "news" or comment, into the newspapers; how they censored school text books; how they "subsidized" teachers and in a few cases colleges—all on behalf of the interests of their employers.

There was nothing inherently wrong in what these "publicity men" have been doing for the electric power folk, who have as much right as any others to propagandize an over-propagandized world. They might say, with assurance, that they were doing only what others are doing in numerous spheres. Use of it variously for "patriotic" purpose during the war raised to a high if not baneful art status the "publicity" kind of propaganda. The interest which has not made use of this method of "selling" itself has been at a disadvantage. The public utilities investigation gives an inkling of the extent and an insight into the ways by which the public mind is confused by "publicity" sharps.

Interests like the public utilities have had to adopt the method to protect themselves from inimical agencies that use it even more unscrupulously. It is curious that the method employed commonly by such interests was perfected by a famous "reform" organization which brought about by it the most far-reaching social change ever attempted by law in this country.

It is announced that when the investigation is resumed in the Fall, attention will be given to the financial and operating affairs of the public utility companies. Disclosures anent operations should be highly creditable to the companies. No producing industry has made more admirable progress than that which supplies the public with electric light and power. Its technical advance in the last ten years is almost revolutionary.

NEW EQUIPMENT AT N. C. STATE

Two Trutint units have been installed in the textile department of the North Carolina State College, Raleigh, N. C., to aid the students in matching colors in the dye laboratory. These units are precision apparatus for producing north skylight or northern light, and are the result of research in the laboratories of the National Lamp Works.

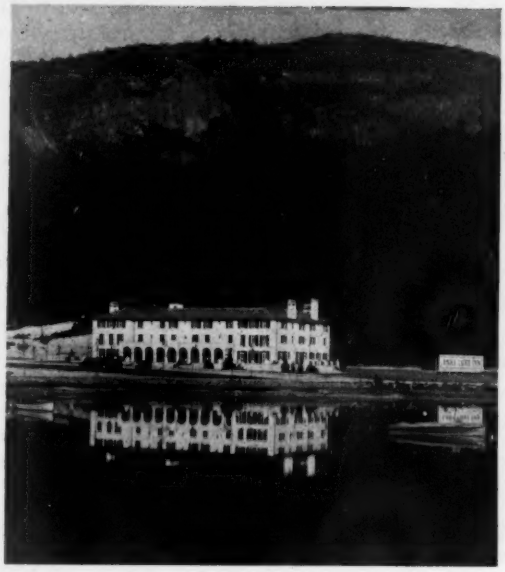
A "Saentis" enlarging camera has been installed to economize in the time usually required to make Jacquard designs. This machine facilitates the enlarging and making of textile designs and at the same time produces accurate results.

Institute Presents Principles for Figuring Costs

THE Cotton-Textile Institute, Inc., 320 Broadway, New York City, has issued an outline for cost-finding principles, which represents the results of the Institute's research on the subject. It offers sound principles of pre-determining costs, arrived at after exhaustive study, consultation with mill groups, and cost experts.

The outline emphasizes the necessity for correctly figuring normal production; and offers general principles on cotton cost, depreciation and obsolescence, interest on investment, labor supplies, etc. President Hines, of the Institute, in submitting the outline, offers it, not as a detailed cost manual, but as presenting proper basic principles. It is recommended by Mr. Hines and George W. Duncan, Institute cost engineer, and approved by Joel M. Barnes and Ralph E. Loper, cost experts, and Price-Waterhouse & Co.

All mills are urged by President Hines to re-examine their cost methods on the basis of this outline. Copies of the complete outline are available at the Institute offices.



Spinning Room Subjects Covered in Meeting at LAKE LURE

PRACTICAL DISCUSSION of spinning subjects—some new and some old—featured the meeting of the Spinning Division of the Southern Textile Association, held on Friday, September 7th, at Lake Lure Inn, Lake Lure, N. C., a location ensconced in a beautiful and imposing mountain setting in Western North Carolina. In spite of threatening weather, a large number of mill men attended, and many interesting ideas regarding spinning room operation were developed in the discussion, which is reported practically in full in the following paragraphs.

In the absence of Carl R. Harris, president of the Association, who is chairman of this division, Marshall Dilling, superintendent of the A. M. Smyre Mfg. Company, Gastonia, N. C., presided. Mr. Dilling formerly was chairman of the carding division, and utilized his experience in directing a most successful and valuable discussion.

In opening the meeting, Mr. Dilling announced that the theme would be, "The Proper Maintenance of Spinning Machinery Necessary to Produce Quality Yarn", and asked for suggestions of topics to be discussed. A number of men responded immediately, and the chairman took up the questions in order.

METHODS OF OILING ROLL STANDS

The first topic taken up referred to methods of lubricating roll stands. Mr. Dilling asked if anyone was using the greasing system, or self-oiling system for this purpose. The first to respond was G. T. Penland, overseer of spinning, Parkdale Mills, Gastonia, N. C., who said that, "We have recently installed a few of these. However, our stands are a little narrow, and on account of this the oiler couldn't give enough oil to justify it, but we are using it on our twisters with very good results. It is screwed into the bottom of the stand."

Mr. Dilling explained that the greasing system he had reference to was used to apply the grease two or three times a week. Mr. Penland said he had not used grease by this method, employing "Non-fluid" oil. Mr. Dilling asked for other experiences, and E. A. Franks, superintendent, Dunean Mills, Greenville, S. C., replied:

"We have just installed that oiling system; we have put it on our twisters and spinning also, but of course we haven't had it long enough to say just what we think of it, but so far, it is all right. Of course, there are lots of things you must do: the rolls must be in good shape, with good necks. But this is the best thing I have ever seen in the way of an oiler."

"Why do your rolls have to be in good condition?" asked C. S. Tatum, manager, Consolidated Textile Corporation, Raleigh, N. C.

"Well, this oiler is put on the bottom of the stand," Mr. Franks explained, "and it is fed by a wick. If the roll is rough it makes it feed too fast. It siphons it out, and the roll should be in good shape. I do not mean it will not wear, but you will have trouble until that roll slicks up. Sometimes it will siphon the oil too much if the roll is rough, but on a smooth roll you will not have any trouble with it at all; and it will slick the roll up.

"Another thing: I think it helps hold the breaking strength, for this reason: most people oil once a day, in the mornings usually, and in the late afternoon or evening the rolls get dry and begin to chatter, and you will not get as good breaking strength when the rolls are dry. That has been our experience; this thing will absolutely oil the rolls just right. We have it on 51,000 spindles and our twisters, and we think it is all right."

Left, Carl R. Harris, Chairman Spinning Division; Right, Marshall Dilling, who conducted the Discussion.

"I put in six of them," said A. P. Richie, superintendent, Dixon and Trenton Mills, Gastonia, N. C., "two on the spinning frames and two on the twisters, and then two twisters with the Alemite system. In testing the yarn I didn't find that I got any better breaking strength at one time of the day than at any other. I have found that this self-oiler will stick up; I have two that seem to have gotten crusty. It feeds so heavily that you will put more oil in your back guides or thread boards than in oiling with a cup. On the twister it is a nice oiler, but we got too much

oil there. It runs up on the stands from the back and down on the board, and also it will work to the roll, which will come out and catch the yarn." Mr. Richie added that his experience with the Alemite method on twisters had not been satisfactory as he finds a lot of black work, although it doesn't waste as much grease as the oiler does.

E. B. Brannan.

E. B. Brannan, overseer of spinning, Spindale Mills, Spindale, N. C., reported that he had secured fine results over a period of six months. He has them on 14 frames, he said, which are equipped with chain drives, and before using the oiling system, he put on sometimes as many as three chains a month, "but since I installed these I haven't put on a chain—in six months."

"We have installed the greasing system," reported Mr. Dilling, "and on a frame we have had three roller necks to break. Has anybody else had that experience? I do not know whether this was the cause of it, but it happened. Does anyone know whether it has given them any saving in power consumption?"

Mr. Brannan said he had no figures, but from what he understands it does make the power load some lighter. "Then that is something worth-while," commented Mr. Dilling, "if it is a saver of power." Mr. Brannan added that his breaking strength had increased 2½ pounds in two months.

"We have two frames on the greasing system, and one with the wick oiler," reported D. O. Carpenter, overseer of spinning, Thrift Division, Kendall Mills, Inc., Paw Creek, N. C., "and so far we have not been convinced that they are of any benefit. We think that the proper lubrication with the former method is much better." As to breaking strength he said they made a test on the frames with these oilers, but which also had cork rolls and new bobbin holders on them, and that the salesman for each had claimed increased break—but that of course he could not attribute improvement to any particular feature.

BALL BEARINGS ON SPINNING FRAME CYLINDERS

Mr. Dilling then brought up the next question, which asked if anyone had installed ball bearings on the spinning frame; and if so, what report could be made regarding them as a power saver.

W. E. Hammond.

"I couldn't tell you the saving," replied W. E. Hammond, superintendent, Balfour Mills, Balfour, N. C., "but we have had a full equipment of ball bearings ever since we started. A while ago a man submitted a question about hot bearings. We have been running for four years, day and night, and we have never experienced a hot bearing. Our frames are equipped with Link-Belt drives. Perhaps this and the Fafnir bearings have something to do with it."

The chairman asked J. A. Chapman, Jr., vice-president, Inman Mills, Inman, S. C., if he had used them, and Mr. Chapman replied that, "I bought a set but the man never did deliver them, and so I didn't push him for them."

"I have eight frames with ball bearings, and tested them about a year ago," said Mr. Richie, "and on the ball bearing frames our tests showed that we had a gain of ½ horse-power on four-frame group drive, but we have had considerable trouble with the ball bearings."

C. G. White, Ora Mill, Shelby, N. C., said, "we have a whole installation of ball bearings we have been running for four years, day and night, and have not experienced a hot bearing. I am sure it saves power, but we started up on them and I cannot give you any comparisons."

The chairman here referred to the new application of ball bearings in the bolsters of spindles, but no one present indicated experience with this new development.

Reverting to the greasing system, J. D. Pell, superintendent, Mooresville Cotton Mills, Mooresville, N. C., asked whether this was being supplied with new equipment. "It has been reported to me that one machinery maker has adopted the greasing system on all machinery, but that came not from the machinery representative, but from elsewhere," said Mr. Dilling.

WHAT IS THE BEST WAY TO CONDITION FILLING?

The chairman brought up the next question which was with regard to conditioning filling "from all standpoints, considering the bobbin used, the condition of the filling as to whether it sloughs off, and the best weaving qualities for it after it has been conditioned?"

C. S. Tatum.

Mr. Tatum, who had asked the question, explained it: "The reason I asked that was that we are not equipped with a store-bought conditioner, and have found that we have been troubled a great deal with kinky filling, and we rigged up a home-made affair, but we found that the bobbins began to swell. I have been told it is better not to steam them but to sprinkle them with hot water. The bobbin people say if we buy a certain kind of bobbin with a brass bushing in them it will stop it. Sometimes you must ream them out. Then I find some of the bobbin makers say it is better not to have any shellac, but to use the bobbins that are dipped in oil, or enameled. There seem to be several ways to get around this problem, and I would like to have the benefit of your ideas. It has been my experience with the enameled bobbins that you will have more sloughing-off in the loom." He indicated that he preferred a quill with the bushing on the inside only, as the outer shield would damage the hands of the operatives.

"I condition my filling for from four to six hours," said Mr. Brannan, "and I use the enameled quill. I use cold water and hot steam, and if I take the quills out of the conditioning system under four hours I cannot find that it does any good whatever. We have tried it all, from steaming them all the way through."

"Do you have any trouble with sloughing-off or the bobbins getting out of shape?" asked Mr. Dilling. "Not with the black enameled quill," was the reply. Mr. Brannan added that he had tried some oil-soaked quills, in response to a question from Mr. Dilling.

"On 14s to 44s filling, we do not have any trouble by using a brass tip bobbin," reported Newton G. Hardie, superintendent, Oconee Mills Co., Westminster, S. C. "We have our filling boxes with a steam connection in the bot-

tom. We fill the boxes up with filling and hitch them onto the steam line and let the steam run through the quills for four or five minutes. We use enameled bobbins. We have no trouble with sloughing or kinking. If you don't have that bushing you will have trouble with swelling."

"Has anybody used the oiled bobbin instead of the enameled?" asked Mr. Dilling.

"Yes," replied Mr. Tatum. "They seem to be better than those that are shellacked. We are trying them out now."

"How does the cost compare?" asked Mr. Hardie. "The enameled bobbin is considerably higher than the shellacked."

Mr. Chapman reported that the cost is about $10.00 per thousand cheaper, and that a charge of $1.00 per thousand is usually made for the oil-soaking.

"We had that bobbin, not with the brass bushing on the inside, but around the outside, on both warp and filling, and we had to throw it out. It cut the spinners' hands. . . . I would like to have some discussion on the different types of conditioning rooms, because I have figured on putting one in. Is a slow low temperature or a high steam condition, where you shoot it through, better?"

"I think that the bushing on the inside of the bobbin would keep the bobbin to a better fit on the spindle, and the one on the outside is a protection against splitting," observed Mr. Dilling. "The inside bushing was made especially for this purpose."

J. A. Chapman, Jr.

"We put in a bunch of bobbins with the brass tips, and I noticed that the tips are beginning to split," reported Mr. Chapman. "They have not been conditioned."

C. W. Alexander, overseer of spinning, Erwin Cotton Mills, Cooleemee, N. C., asked if in conditioning filling, anyone had found that the rings on the bobbins rust when live steam is applied to them. Mr. Brannan explained that it is necessary to secure rings made from rust-proof material.

A NEW CONDITIONING MACHINE.

"While we are close to it, suppose we take up the matter of conditioning rooms, conditioning equipment and conditioning machines," suggested Mr. Dilling. He mentioned a new German machine which uses a chemical for conditioning the filling, and which he said has attracted a great deal of interest. He then described his own method briefly, saying that he has a conditioning room for conditioning cones of sale yarn, etc., in which he keeps 100 degrees of temperature and 100 per cent relative humidity. He said he keeps his cones in this for about 12 hours. "We gain something in weight," he said, "but the biggest advantage is that it sets the twist thoroughly. Some other method may do it quicker, but it happens that this arrangement suits our conditions and requirements all right." Referring to the German machine mentioned, he said he understood this applied an ingredient to the yarn which would retain the moisture indefinitely.

Mr. Tatum said that his conditioning was for filling to be used in the loom. He said he has a chute by which the filling is received in boxes from the spinning room, and that under this chute he has a space about 4x12 feet, which he lined with tin. Then he put a tin trough about six inches wide around this space and filled it with water. In the trough is a perforated steam pipe, so that wet steam is secured. His filling boxes are made of hardware cloth of the proper mesh. "This makes a very effective way of steaming the filling," he said, "if we could get the right kind of a bobbin. We keep it under 120 degrees temperature."

W. F. Davis.

J. D. Pell explained a system built in the shape of a vault. The water is sprayed on the yarn, and then it is given a bath of steam, the yarn sitting in the vault for a while. Then a vacuum is used for extracting the moisture. He pointed out that silk manufacturers throw water on the metal quill boards and then let steam come up through the water, giving a wet steam. "I think the best way is to have a regular reconditioning room just as is used for conditioning knitting yarns," he said, "in order to give it a chance to penetrate." Mr. Dilling brought out again that the big advantage of conditioning is setting the twist. Mr. Tatum asked if, when the twist is set, it would stay set.

"Not if it is shipped in a dry box-car," someone said.

Here the discussion turned to the German type of conditioning machine which had recently been introduced in the South. C. L. Chandler, superintendent, Gaffney Mfg. Co., Gaffney, S. C., said, "We are very much interested in this German machine; in fact we have bought one. I understand they have one of them at the Monaghan mill in Greenville. Our understanding is that it does all they claim for it, and if it does we think it is worth the price (which he said later was $5,700). It doesn't affect the bobbin—and once conditioned, always conditioned. We have thought enough of it after listening to their story that we have bought one to put in."

"How long does it take to condition the yarn?" asked Mr. Dilling.

"They say less than four hours," replied Mr. Chandler, "in fact they claim the yarn goes right on through the machine."

W. O. Holliday, overseer of weaving, Apalache plant, Greer, S. C., who had been connected with the Monaghan plant when this machine was installed there, was asked to discuss it. He said they had been having considerable trouble with their filling, and had built a chute in a tower, in which the filling was conditioned with steam, "but we couldn't do anything with it until we got this machine. You pour the quills on an apron and it runs right on through, and pours them out conditioned on the other side. We put it in the loom and it was conditioned quite a bit better than it was running it through the chute in the tower. When the filling got to the weave room you couldn't tell but what it was perfectly dry, except by the odor. If we wanted to know if filling had been put through the machine all we had to do was smell of it, but otherwise there was no difference." For a 60,000-spindle mill, he estimated, the machine could condition all of the filling in a half-day provided the filling was ready.

N. G. Hardie.

The machine uses a chemical in the water, said Mr. Dilling, and the machine applies it properly. He asked about the possibility of mildew. Mr. Chandler said the machine manufacturers have two kinds of chemicals; one of which is guaranteed not to cause mildew. The other, he said, is not expected to produce it. The guaranteed material costs more than twice as much as the other, he said.

Mr. Dilling told of a demonstration the machine representatives had made in his office. He said they took two glasses of water, and put a few drops of their chemical into one. Then they put a strand of waste yarn into the plain water, and the cotton remained on top. Dropping a piece of the yarn into the water containing the chemical, he said, it sank almost immediately, and went to the bottom, "showing that this chemical does penetrate the yarn very thoroughly".

SOFT PLACES AND "COTTON ENDS" IN YARN

The next question presented asked for the causes of soft places in yarn, on band-driven equipment; some of these places apparently having no twist at all.

"My experience in making voile yarn," said Mr. Franks, "was at one mill that once in a while there would be places with not much twist in them. We tried for about two years, and then we took all the bolsters out and washed them good in gasoline, and washed out the steps and cleaned them good, and put them back, and we never had that trouble any more. The spindles seemed to be dragging or to be retarded in some way."

E. A. Franks.

"A lot of it depends on the setting of the rolls, and the weights," added Mr. Dilling.

"I would say that the trouble is evidently in the rolls or back somewhere in the drafting arrangement. I would make a thorough examination of the spinning rolls and all of the drafting processes." This suggestion was from Mr. Penland.

"Insufficient weight on the rolls, sprung levers or levers out of shape, hard twist, etc., will also cause this," said Mr. Dilling.

"But what makes it run good a while and soft a while?" asked Mr. Tatum.

"It seems to me there might be a possibility of the trouble being in the cotton; if the cotton is rough and harsh," suggested another member.

"But if you would add sufficient weight to it, it would draw," said Mr. Tatum. The member explained he had had this trouble one time when he had a lot of 150 bales of this cotton, and said if he had run this through at one time he could have probably come out all right.

SPINDLE AND FRONT ROLL SPEEDS ON SPINNING

The discussion continued with a question as to the best spindle speed for 68s mercerized twist combed yarns, with about 3.5 times the square root of twist.

Mr. Penland, who had asked the question, said he is running a little more than 10,000 r.p.m. Responding to a question from Mr. Dilling, Mr. Richie said he has a spindle speed of 10,500 r.p.m., on a 1½-inch ring, with a front roll speed of 123 r.p.m.

"I think if you are getting over 10,000 r.p.m., Mr. Penland, you are getting a pretty good speed, and haven't anything to complain of in that respect," said Mr. Dilling.

"What is a good spindle speed on 30s carded warp yarn?" was the next question.

"On filling wind warp," said Mr. Carpenter, "we run 9,300 r.p.m., with a 120 r.p.m. front roll speed, 4.43 twist multiple."

"We're running 9,300 r.p.m. on the spindle, but we're not getting 120 r.p.m. on the front roll," said Mr. Chapman.

FILLING WIND FOR WARP YARN COMES AGAIN

The advisability of running filling wind on warp was brought up by George K. Tate, superintendent, McAden Mills, McAdenville, N. C. He wanted to know if it is possible to run filling wind on 30s carded warp and maintain breaking strength with less twist than on the warp wind. He said he has been casting around to find some way to reduce his cost, and that if he can put on the filling wind he can increase the speed and reduce his cost materially by re-arranging his night shift. He said he tried it and got 15 per cent more speed, but didn't know whether he had affected his breaking strength.

Geo. K. Tate.

Practically everyone present indicated that this was entirely possible, in showing a preference for the filling wind. C. S. Tatum was, as he called it, "the freak" who had been unable to find any advantage in running filling wind on warp. There were some present who were using warp wind but preferred the filling wind; but who were compelled to use warp wind because they operated the Barber-Colman system of high speed spooling which does not permit the filling wind for warp. In connection with filling wind, Mr. Carpenter, of Paw Creek, said.

"I think we are all trying to get too small a bobbin on the filling wind. We have a 1⅞-inch ring, and a ⅝-inch bobbin, and I believe that our work would run better if we didn't have such a small bobbin. We all try to get too big a package." Most people find they can run a smaller bobbin and a longer one, said Mr. Dilling, who added that, under conditions permitting its use, filling wind gets from 10 to 30 per cent more yarn on the bobbin, with an increased speed. However, he pointed out, it might be possible to go back to warp and get better results than formerly, because there are other changes which have to be made in order to put in filling wind, and if these were carried out with warp wind, improvement might be noted.

"We went from warp wind to filling wind," said Sam Smith of Shelby, "and had trouble at first, but I think it was due to the rings. They show a different wear. When you change the rings you get out of the trouble. If you were to change back to warp you would find the same trouble, because there is a different wear on the rings."

Mr. Dilling next asked for front roll speeds for 20s warp yarn, warp wind. Mr. Tate replied that he runs 134 r.p.m., on three-year-old frames, using ⅞-inch Middling cotton. The man who asked the question said he was getting 135 r.p.m. on older frames. The chairman next wanted front roll speeds on 33s warp yarn, filling wind, but no one furnished this information.

"What is the best method for cleaning spinning frames?" was the next topic discussed. J. F. Fairchild, overseer of spinning, Mooresville Cotton Mills, Mooresville, N. C., who submitted it, explained that he referred to the general purposes of cleaning. He stated that he uses air mostly, employing whisk brooms also, but once a day going over rails, rings, and underneath the frames with compressed air. Mr. Dilling, in responding, told of an automatic bunchless cleaner, produced by Firth-Smith Co., which he had installed. "We find this is very satisfactory," he said. "It is a great help to the spinners, and it will keep the spinning room in much better condition. We cannot think of using compressed air on combed work, but this other cleaner we find is very effective."

David Clark brought out here that the Carlton Yarn Mills, Inc., Cherryville, N. C., of which C. A. Rudisill is treasurer, is also using this method satisfactorily on 120s; and doesn't use any other cleaning methods on his spinning frames.

What Do YOU Think?

Are cork rolls proving successful?

How is the best way to lubricate a spinning frame? To condition filling for weaving?

Is filling-wind warp practical under all conditions?

How long does a leather roll last? How long should it last?

Does the speed of the traverse up and down have an influence on sloughed-off filling? What does?

Extensive discussions on these and many other subjects will be found in the accompanying report. The Discussion Department of COTTON will welcome opinions on any of them from readers who did not attend the meeting.

In explaining the system, Mr. Dilling said that the cleaner passes around the spinning frame every five or ten minutes. "If it only went around every two hours or so it would do more harm than good," he said. "I think it is going to come into very general use—but we can't all put them in at one time, so let's hear about other methods of cleaning, too." But the men seemed desirous of discussing this new cleaner. "This new cleaner will do the work of wiping the guides, etc.," explained Walter L. Davis, assistant superintendent, Proximity Mfg. Company, Greensboro, N. C., who said he had the cleaners over 120 frames on 8½s.

"What results do you get in the way of labor saving?" Mr. Dilling asked him. "None," replied Mr. Davis.

"But you do find that it helps the spinners?"

"Oh, yes," replied Mr. Davis.

THE MULTIPLE SYSTEM—USING SPECIAL HANDS FOR CLEANING IN THE SPINNING ROOM.

Here Mr. Pell brought out the fact that "Everybody can't buy that system right now. What we would like to know is do people use extra cleaning hands, or how do the spinners do their cleaning?"

This brought up the current question of using special hands for cleaning, and Mr. Carpenter, of Thrift, responded. "We have spinners running 20 sides, 252 spindles to the frame," he said, "and then we have cleaners. The spinners just piece up ends and set in roving and take off what we call laps, and then we have the cleaners to do all the rest of the cleaning. This is on 30s warp and 40s filling. We have cleaners who clean from 20 to 60 sides. We made some re-arrangements in our cleaning when we put this system in. Now we have the major things cleaned during the day shift—such as picking rolls, wiping roving, etc.—and the smaller things done on the night shift."

"Did you find any objections?" asked Mr. Dilling.

"At first the spinners seemed to think it would make things harder on them, but they found out differently," replied Mr. Carpenter.

"Do you clean while the frame is doffing?" asked Mr. Richie.

"The ring rails and under guides are cleaned during the doff, after the doffers have finished the cleaners go around and clean these, but we wipe roving and rolls while the frame is running," answered Mr. Carpenter.

He added, in response to a question from Mr. Dilling, that there had been a saving in cost, but he did not know just now much.

Mr. Richie reverted to the automatic bunchless cleaner, asking Mr. Dilling if this system required more humidity.

"I think it distributes the humidity much better," replied Mr. Dilling, "because the cleaner takes its air from about nine feet above the frame, and draws it down from about where the average humidifier distributes it, and blows it down through the creel, and your humidity is much better distributed with that system than without it. It circulates the air, and keeps it moving, and all of the stuff it blows out has a tendency to drop down, and does drop down to the floor. It practically eliminates cleaning above the guide boards."

"With that system, do your spinners run more work?" asked Mr. Johnson.

THE AUTOMATIC BUNCHLESS CLEANER FOR FRAMES.

"We haven't given our spinners any more sides at our plant," said Mr. Dilling, "but we do find that it makes it much easier for them to work. One reason was that at each mill where we have it is so arranged that we couldn't give them another alley. Our spinners ran 12 sides, doing their own cleaning. We have gotten the benefit in other ways."

"Is all of your spinning equipped with it?"

"Yes, every bit of it," said Mr. Dilling. "And we have it over six spoolers, too. In one mill we could arrange to put two cleaners over the spinning frames and spoolers, and we find it very helpful to the spoolers, also."

"Is it very expensive?"

"For 27,000 spindles on fine yarns, it cost about $10,000," answered Mr. Dilling. "On coarser numbers it would cost more than that. We clean 24 frames per cleaner. On coarse numbers you would have to cut down to 10 or 12 frames. Our numbers run from 50s to 80s combed yarn. I know of a mill that runs 4s to 12s, very coarse work, local cotton, and they have put it in to considerable advantage to themselves. I can recommend it to you. We put one in and found out what it would do and then put in the others. Mr. Rudisill came in and looked over mine a time or two and then put his in."

CLEANING STEEL ROLLS

"How often do you take steel rolls out and clean them?" was the next question. Mr. Penland said twice a year on fine work, and Mr. Chandler and others indicated that, on coarse work, this was done once a year. "I think it de-

pends very much on the quality of the yarn you are making and the care you require of your spinners in cleaning around the stands. I know of some mills that clean once a year, but they are very particular to keep the frames well cleaned out around the stands at all times."

A NEW BOBBIN FORMER FOR FILLING YARN

Mr. Dilling next said that another man had asked for the proper length of stroke on 14.5s filling yarn, with a 1⅝-inch ring. J. D. Scott, overseer of spinning, Proximity Mfg. Co., Greensboro, N. C., responded, saying that on a 1½-inch ring he uses a taper of 1¾-inch on 14s yarn. He replied to a question from Mr. Dilling that he believes this gives him "a maximum amount of yarn with a minimum of sloughing off." Mr. Scott then asked if anyone, in making the filling quill, changed the length of the taper as the bobbin fills up. Explaining this question, he said that he is now experimenting with a new "bobbin former", brought out by a man in Danville, Va., which starts at the bottom with a 1⅛-inch taper, and gradually increases this until it is 1⅝-inch at the top. Mr. Dilling asked if this made the bobbin larger at the bottom, and Mr. Scott replied that it did at first, but that the inventor had worked with it and made the necessary adjustments to stop this trouble. He added, in response to a question, that it doesn't give much trouble with sloughing off in weaving and winding.

H. R. Holland.

C. W. Alexander.

"That should be something worth-while," commented Mr. Dilling, "if you could keep the same size of bobbin all the way, because it would increase the amount of yarn on the bobbin."

Mr. Scott said the inventor had told him that he already had some 400,000 filling spindles equipped with this device.

PREVENTING HEATED BEARINGS ON CHAIN DRIVE.

The chairman next presented the next question submitted, which indicated that the questioner had trouble with the foot-end bearing of spinning frames becoming heated, using the Link-Belt silent chain drive. The man indicated that he uses a plain babbitted bearing. Asked for further details, he said he uses a 10½-hp. motor on a 40-foot spinning frame with 4½-inch gauge and 2¼-inch ring, with a cylinder speed of 1,100 r.p.m. He added that it requires 6.6-hp. to drive the frame. He said he had not tried ball bearings, but that he had used "everybody's oil," without any particular improvement. He explained that it would show up first on one frame and then on another; that it would "melt the bearing" almost before he could get the frame stopped. He said he doesn't have the bearing trouble on other frames in the same room, with the cylinder running 1,240 r.p.m., which are equipped with the Tex-Rope form of drive.

W. F. Davis, superintendent, Brandon Division, Brandon Corporation, Greenville, S. C., said he had had such trouble, but finally found an oil handled by someone from Atlanta which had helped him greatly. He said he applies this to the chain while the machine is standing.

V-SHAPED ROPE AND CHAIN DRIVES ON SPINNING

"I have the individual drive with Morse chain," said Mr. Richie, "and we find that we get a great deal more heat from these frames. I have half on the chain and half on Tex-Rope, and on the rope drive the heat is much lower."

"I have 14 frames with silent chain drive, and have not had any trouble with the bearings heating since I installed that lubricating system for the stands," said Mr. Brannan. "We added a tooth more in the pinion, and that helped, but I believe the new lubricating system had a whole lot to do with it."

"We have the individual drive," said W. C. Johnson, overseer of spinning, Dunean Mills, Greenville, S. C., "but we don't have trouble with the chain. We do have considerable heat, however. So many motors in a room will heat it up, but we don't have any bearing trouble at all."

Here Mr. Dilling asked for discussion as to the difference in maintenance cost between the chain and V-shaped rope drive. He explained the policy of the Association as to prohibiting the use of trade names unless necessary, pointing out that there are on the market several different kinds of V-shaped rope drives. "The opinion seems to be that with the V-shaped rope you have less heat and less trouble with the bearings," he observed. "Is there any difference in the maintenance cost?"

"We have six frames that we changed from the chain to the V-shaped drive," said D. E. Elmore, superintendent, Wymojo Yarn Mills, Rock Hill, S. C., "and before we changed we had considerable trouble with bearings and a lot of things, and since we changed we do not do anything to the bearings and do not have any trouble. I think the rope is much cheaper than the chain. We have run them for two years, and haven't changed a one of them. They of course save the cost of the grease, are cleaner and much less trouble. These six frames have given us absolute satisfaction for two years."

Mr. Dilling here brought out in connection with the V-shaped rope that it does use a considerable amount of cotton mill products.

"We have the V-shaped drive on twisters," said Mr. Richie, "and I think that the upkeep is cheaper, but when a rope breaks using four as you do, and you put on a new one on there, you will break the new one. You have to put on a set of new ones, throughout." He pointed out in regard to the chain drive, however, that the chain manufacturers have made some remarkable improvements within the past few years; and that most of the chains now are especially well-oiled.

In connection with the rope drive, H. R. Holland, overseer of spinning, Caroleen Mills, Caroleen, N. C., explained that his method is to save the old ones and put them on together when a break occurs.

C. G. White, Shelby, N. C., said that another mill owned by the same interests that controlled his plant had difficulty with bearing trouble with the chain drive, but that this practically disappeared when the frames were changed over

to the V-shaped rope drive.

This practically concluded the discussion at the morning session. The usual "Dutch" luncheon was served in the attractive Lake Lure Inn, following which the discussion was resumed in an afternoon session.

The Afternoon Session

In beginning the afternoon session, Mr. Dilling took up first some questions which had been submitted during the noon recess. The first asked whether it is advisable to use double flange rings and turn them over after wearing on one side; the next asked whether anyone present uses the 0-flange ring, narrower than the No. 1. There was no discussion on these two points.

The third question was, "What causes thread laps on the front roll, on 30s filling?"

"That is usually due to a damaged roll," someone replied.

"But I happen to know that this is practically a new mill," said Mr. Dilling, "and he shouldn't have that; he doubtless has case-hardened rolls and should have no burrs or rough places on them."

"Sometimes a burr on the thread guide will catch the thread and hold it, or a little groove in the thread guide will grab it and that will let the steel roller catch it," suggested S. A. Summey, superintendent, Alexander Mfg. Co., Forest City, N. C.

"A hard end will do it," said Mr. Brannan, "where the speeder tender put up an end wrong it would come through hard and dive under the roll and draw the thread back."

Mr. Dilling also observed that frequently within recent years complaints are heard of cotton which apparently contains ingredients which make it stick to the roll. This may be either some sort of gum or wax, or possibly alkali, he said, and this could cause the trouble mentioned.

USING CORK-COVERED ROLLS IN SPINNING

"How do you think cork rolls compare with leather rolls?" the next question, started an interesting discussion. In opening it, Mr. Dilling said that, "for your information I would like to state that The Arkwrights, Inc., submitted a test to a party some few months ago, covering a comparison of cork rolls against leather rolls, and that was tested out pretty thoroughly, with two or three different kinds of twist and four different numbers of yarn. The result showed that on every number and with every twist, the cork rolls gave a better breaking strength than the leather roll. I am not sure as to the report on the number of ends down, but I do not believe there was very much difference, but in every case the cork rolls showed an increase in breaking strength. The numbers ranged from 20s to 44s. Somebody else has had some experience with cork rolls, and I would be glad to have you state just what that experience has been."

C. H. Lockman.

A. W. Young.

"I have tried the cork rolls, running them against the leather rolls, for a period of 63 days," reported Mr. Scott. "On 13s warp I found that the breaking strength was eight pounds less on the cork rolls, and the end breakage was 15 per cent more. But, this is not a recent test; it was made two years ago."

Newton G. Hardie, superintendent, Oconee Mills Co., Westminster, S. C., who had submitted the question during lunch, offered his experience.

"We have had four frames on cork rolls, and we have been thinking of going onto cork rolls altogether," he said, "in the spinning, and carding too, and I wanted to get some other experiences and opinions on them. We have had these four frames for two years, running day and night, on 40s filling, 19s, 30s combed and 30s carded warps, and we have had the rolls re-buffed twice. The rolls have not been re-covered. So far as the breaking strength is concerned, we have made tests and couldn't find any difference either way; it runs just as good; and where we save money is in the cost. We get just as good results, and we can re-buff these rolls about twice more, so that we should get from 3 to 3½ years on the same roll without having them re-covered. They cost about half, or maybe less than that."

"I think on the coarser numbers the cork rolls have some advantages," commented Mr. Dilling.

"We have made some tests on cork-covered rolls on Pima cotton, making 100s," said Mr. Johnson of Dunean. "We had 12 frames with leather rolls and 12 with cork, and made the tests over two-hour periods. We find as many again ends down on the leather as on the cork, but there are some disadvantages in the cork. It seems that it doesn't carry as much of the short fibers up under the clearer as the leather roll; the flutes on the steel roll fill up out where the roving traverse doesn't run; it will choke them up with neps in the flutes of the steel roll."

"How about the breaking strength?" asked Mr. Dilling.

"We couldn't tell any difference in the breaking strength," replied Mr. Johnson. "We have run a couple of these frames on 100s for over 15 months."

"Talking about laps on the front roll," said E. A. Franks, superintendent at Dunean, "we have been running

"What's New?"

SELDOM does one of these practical discussion meetings fail to reveal some new device or practice. At Lake Lure there was discussion on a new bobbin former that starts the taper 1 1-8-inch at the bottom, and finishes it 1 5-8-inch at the top; a new conditioning system said to penetrate the yarn so that the moisture remains indefinitely; an automatic cleaner for frames which eliminates much of the regular cleaning as a duty of the frame hand; new lubricating systems for spinning frames; etc.; etc.

The reports of these meetings in COTTON, such as this one, will keep the reader posted on such new developments, when progressive mill men describe their experiences with them in these discussions. And this in addition to the exchange of ideas on more familiar topics.

The Service Department of COTTON will gladly supply further information regarding any device or attachment which may be discussed at these meetings.

those two frames that long on Pima cotton, and you fellows who use it know that it is a cotton that is grown by irrigation, and it doesn't take much moisture to run it. When it is like that it is bad to lick up. In watching those frames we noticed on the cork rolls that we never saw one lap up, and we decided to put on ten more frames and make a test, and we found that you could tear down a whole side with your finger with the cork roll and they will not lick up, but they will do it with the leather.

"We make lots of tests on these frames, and we notice that when the yarn off of the cork-roll frames, when wound on a black-board doesn't look as clean. You never have any slat waste to speak of. This catches in the yarn and spins into it, while on the leather roll it goes on up to the slat. Everything being equal, if the yarn was as good, I would rather have the cork roll."

"I think it will be more economical in places where you can use it," said Mr. Dilling. He asked Mr. Franks if the report was true that a fine goods mill in Greenville had gone entirely onto cork rolls. Mr. Franks said his was one of the few fine mills there, and he had not heard of any others that had been completely equipped with the cork roll. He explained that he has the cork covering on the front roll only.

Mr. Dilling explained that the test made for the Arkwrights was not intended to be conclusive, but that he had presented its results entirely as a matter of information. He asked Mr. Franks if he could say anything about the comparative cost. Mr. Franks replied that the cost of the cork isn't as much as half that of the leather roll, figuring in the re-buffing machine, etc. A question as to the cost of the re-buffing machine brought answers that it had been reduced recently and now costs around $300.

THE LIFE OF LEATHER SPINNING ROLLS

"How long will a leather roll last?" was the next question presented by the chairman, who called on A. W. Young, superintendent, Franklin Process Co., Fingerville, S. C.

"It depends on the spinner you have in that alley," replied Mr. Young.

Mr. Richie replied, saying that while he did not have the exact figures, he recalled that his tests showed an average life of about three months and ten days.

On 51,000 spindles on fine work, running night and day, said Mr. Johnson, he uses 2,100 rolls per week. His numbers run from 30s to 120s, using three kinds of cotton. He later added that his average is a roll to the frame per day and a roll to the frame per night.

H. R. Holland reported that on 48,816 spindles, he averages .61 rolls per frame per day. He pointed out that the number of the yarn, the twist in the yarn, the twist in the roving, etc., etc., had an influence on the life of the roll.

Mr. Franks submitted a question as to the proper amount of twist to put in 10-hank roving made from 1½-inch cotton. 4.61 turns per inch was suggested. "We are running long draft spinning," explained Mr. Franks, "and to draft it we must have a low twist in it. We are running all of our 1½-inch cotton drafting it 20.25, and we cut our roving twist multiple to .80. That's pretty low, isn't it? Of course we had to cut it down to that before we could draft it. Personally, I think the proper twist is just enough to pull it off. It doesn't make any difference what the multiple is. We find we can go down on 1½-inch cotton to .80 with the long draft."

"That's about 50 per cent under standard," said Mr. Dilling. "But you couldn't do that with inch-cotton."

"How many spindles can one man keep taped on tape-drive spinning, doing nothing but the taping?" was the next question. S. A. Summey answered, "I would say about five acres!"

Mr. Dilling explained that most mills have the man doing this work also perform other duties. "I have 16,000 spindles on tape drive, and this man does the oiling and over-head cleaning, such as motors, humidifiers, etc.—but he doesn't oil the spindles."

"On 16,000 spindles we have one man who does all of the oiling, except the spindles, and also takes care of the taping on these and 8,000 twister spindles," reported Mr. Penland. "He does the taping on that amount and then he cleans the humidifiers, etc., like yours does."

"And if he only had the taping to do, he could take care of twice that," said Mr. Dilling. "Yes", agreed Mr. Penland.

"Does anyone have the Firth-Smith bunchless cleaner over warper creels?" asked Mr. Dilling. He explained that the idea of the cleaner was conceived from the use of a fan over the beam warpers, and that it had been extended from that to other things such as spinning frames, roving, twisters and spoolers. "I think in some of these high-speed warping machines we have now, especially when warping from cones, there is a lot of loose fly, and it is necessary to have something to keep them clean."

J. D. Scott, who had asked the question, explained that he has five Cocker high speed warpers, with Foster cone creels, and that in beginning the use of the bunchless cleaner, he had tried one over the five warpers, then increased the number. He said this will clean the creels all right, "but we have trouble with the lint when it settles on the floor. When the machine comes around it blows the lint on the floor into the next machine, and I just wondered if anyone had that trouble and how they remedied it." Responding to questions from Mr. Pell, he said he has the high-speed equipment on 8s to 13s, and the warpers run 175 yards per minute, over end from cones. He said he has one warper hand, and a creel hand for each warper.

Mr. Young asked if anyone else had trouble with the lap roll licking up the sliver instead of it running straight down, just as if there wasn't any scavenger roll there. Mr. Penland said he had a 1⅛-inch steel roll, which puts the lap stick a long way from where the end comes out. He had quite a bit of this trouble, and found the remedy in controlling the draught in the room. He said also that he is putting in a paper covered scavenger roll which helps out considerably. Mr. Dilling mentioned that with the traveling cleaner this would be an especially bothersome difficulty. Mr. Young said he thought his 1-inch scavenger roll was set too far under the steel roll. Mr. Dilling suggested that if he would use a little larger scavenger roll it might help some.

"How about your humidity," asked Mr. Dilling.

"We get as much as we can," replied Mr. Young.

Mr. Penland said he didn't believe the size of the lap roll had much to do with it, but repeated that the controlling of the draughts in the room was the most important factor, in his experience.

The next question aroused an extended discussion. It was, "Is there any advantage in running the traverse up slow or down slow?" It was asked by F. W. Waldrop,

overseer of spinning, Drayton Mills, Spartanburg, S. C., who said, "I have some running both ways, and can't decide which way is better. My numbers run from 20s to 110s."

RUNNING THE TRAVERSE UP FAST OR DOWN FAST—PREVENTING SLOUGHING OFF AT THE LOOM.

"On our filling-wind warp we run our traverse up slow and down fast, and on filling we run it up fast and down slow," said J. D. Scott of Greensboro. "We tried it down fast on filling about two years ago. There was a fellow who seemed to think that would correct some trouble we were having. He finally got an order through to change it, and when we changed it just about shut the weave room down. We had the old builders, old cams, etc., with the lost motion in them, and when we changed over the lost motion worked back the other way, and the filling sloughed off."

"Did you have any more yarn on the quill?" asked Mr. Dilling, since some declare this a usual result.

"I don't know," replied Mr. Scott. "We didn't run it long enough; we had to do something and do it quick!"

G. T. Penland.

Mr. Brannan said that on filling, he changed to up fast and down slow, changing to a traveler two numbers heavier, also changing the lay gear from a 35 to 70. "It seems we get more yarn on the bobbin," he added. He is on 52s, hard twist. He believes that the change of the lay gear, speeding up the traverse, helped out.

"I don't believe it makes a bit of difference," declared Mr. Tatum, "if you don't have the right lay gear it will slough off, and if you have too much lost motion so it will dwell, you will have that trouble."

"I think it depends on the opinion of the man who is trying it," declared Mr. Johnson when asked for his opinion.

"And somewhat on the opinion of the weaver, too," added Mr. Dilling.

W. W. Splawn, overseer of spinning, Watts Mill, Laurens, S. C., pointed out that until recently the machinery builders have been sending out their frames with the traverse going up fast and down slow, and that for the past ten years, "we have been trying to stop sloughing off by turning them around the other way. I have changed three different jobs recently to stop sloughing off, giving the builder motion a real overhauling and getting out the play and giving the traverse all the speed it would stand, and getting the right traveler. I still like going down fast better than going up fast. At the same time I made these changes, I speeded up the traverse 100 per cent, taking off a 30 lay gear and putting on a 60—using a heavier traveler and taking all of the play out. I believe that the speed of the traverse and the right number of traveler helps, but giving the builder motion a good overhauling and taking out the lost motion has more to do with it."

"I suspect there is something in that," said Mr. Dilling. Mr. Splawn brought out that the machinery builders evidently think there is something in the direction of the traverse. He added that in increasing the speed of the traverse, if there is any difference, it decreases the yardage of filling, because in running the traverse faster and crossing it over, there is more air space between the layers of the filling.

"I tried it both ways, and I do not think there is very much difference," reported W. J. Rogers, overseer of spinning, Marion Mfg. Co., Marion, N. C. "We speeded up our traverse and put in a new Pitman roller, a 1¾-inch instead of a 1-inch, and that took out the back-lash. As far as the filling is concerned, I couldn't tell any difference in the amount on the bobbin. We changed from a 26 to 60 lay gear, but didn't change travelers."

Mr. Splawn suggested that some weavers might discuss the subject from the standpoint of the amount of power on the loom.

"Now, of course I don't know that it makes any difference which way you run it," said E. A. Franks, of Greenville, S. C., "but I do know that it does make a difference as to the taper you have on it, because if your taper is too short, it is going to slough off—if you haven't got *any* power on the loom. I don't know why they would want to make a short taper—"

W. C. Johnson.

"The shorter taper will get more yarn on the bobbin," explained Mr. Dilling.

"Well, they'll keep on doing it as long as you don't grumble about it, until they get it too short, and then you will have sloughed-off filling," continued Mr. Franks. "If you have the taper right you are not going to have any sloughed-off filling. If you run the traveler too light you *can* run it by taking power off of the loom, but that is not the right way to do it."

Continuing, and discussing the matter of how to do it with soft twist, Mr. Franks said he is running with less than a 3.00-multiple, and that he knows that a firm bobbin *can* be made with a soft-twisted yarn. "It depends on the weight of the traveler," he said.

D. W. League, overseer of weaving, Greenville, S. C., added to the other suggestions that the type of quill has a great deal to do with it. He agreed also that the weight of the traveler, the lay of the filling on the bobbin, and the condition of the builder motion also influences this proposition.

C. H. Lockman, superintendent, Henrietta Mills, Caroleen, N. C., brought out the point that in his opinion 95 per cent of the sloughing off comes at the loom change; and with the same amount of power on the loom all of the time, he could not see why, if the power was the cause of it, the filling wouldn't slough in the center of the quill as well. "I think it is in the build of the bobbin and the type of the quill," he said.

"What is the best break draft on a spinning frame, making 40s to 100s?" was the next question asked. It came from E. A. Franks.

"I have never found any improvement using anything except one tooth," answered C. S. Tatum. "I have tried two, three, and four teeth break draft, on 20s to 24s, and couldn't find the least bit of improvement."

"I think that depends on whether you are running any

(*Continued on page* 1271.)

Package Dyeing in Circulating Machines

This, Mr. Schroeder's Second Article on the Subject, Covers the Preparation of Yarn for Package Dyeing

By Harold Schroeder

MACHINE dyeing differs from what might be termed dip dyeing in that, in machine dyeing, the yarn and the dye liquor are always in contact. It is not practical as in dip methods to raise the yarn out of the dye liquor while some change is made to the dyebath. Moreover, in machine dyeing the yarn is in the liquor before the dye is put in; whereas in dip methods it is always the practice to make up the dyebath first and put the yarn in later.

Divided into Two Parts.

With the yarn in the dyebath ahead of the dye, the machine dyer is face to face with the problem of mixing his little pail of dye all through the bath and securing even distribution of that dye before any appreciable amount of color goes on the fiber. There are thus two distinct operations involved in machines dyeing—the first, or Operation A as it might be called for short, is to get the dye mixed evenly through the bath, and the second, or Operation B, is to start the evenly-diffused color exhausting on the yarn.

The difficulties which arise in machine dyeing and result in the characteristic rings of color on the package or beam mostly are produced by a scrambling together of Operations A and B; by these processes proceeding out of turn, whereby the strong solution of dye, on being poured into the machine, heavily dyes or pads the first portion of cotton that it comes to, leaving less color to go on the rest of the yarn. In fact, if we want to be excessively precise and "highbrow" we may say that the fundamental principle of machine dyeing is that no dyeing can be level until Operation A is complete, and that Operation A never can be complete as long as B is going on at the same time.

Having got that terrific exposition of profound logic and deep thinking off the typewriter without burning up the bearings, it now remains to demonstrate it to an unbelieving world—full of scorn and surprisingly accurate in throwing bricks—that machine dyebaths can be and are so adjusted to where A is complete before B starts up.

A study of the methods used to control exhaustion will show that in general they are based on additions of chemicals to the dyebath, usually strong smelling, in fact it would seem that the worse the smell the greater the dyeing efficiency. This must be the dyehouse contribution to the back-to-nature movement—back to Nature and the polecat.

In the case of circulating machine dyeing these additions did not prove so successful as in the case of other methods since it was found by continued practical experiments that many reputed slowing-off agents either did not do what they were credited with doing, or while they were in concentrated solution, as they would be at the time of being added to the dyebath, actually caused the color to go on faster than it would have done had these additions not been used.

Finally, however, a method for direct colors made its appearance which really did meet all the requirements of machine dyeing and at the same time cut the cost of dyeing very considerably. This method was to boil out and dye at the same time.

Such a method, to dyers who have not been able to acquaint themselves with the peculiar possibilities of circulating machines, seems a very distinct step backwards, calculated to produce bad work and plainly to be the method of a dyer more theoretical than practical.

But in dip dyeing, the dyer cannot obtain circulation of the dyebath through his goods until he has removed from these goods all gums, fats and waxes and then and not until then can he hope to obtain level and penetrated dyeings. That is why in this class of work there are so many leveling agents recommended which on examination prove to be nothing but efficient scouring agents. Undoubtedly they assist the dyer on this class of work to level his dyeings but they accomplish this desirable end not so much because of any action on the dye but because they complete the scouring of the goods.

In a circulating machine, when dyeing cotton, the desired penetration of the fiber, if the machine is properly adjusted, is obtained in the presence of the natural fats and waxes owing to the efficient mechanical circulation. In other words, the dip dyer must have clean yarn to get penetration. The circulating machine will give penetration, so far as water is concerned, with the yarn still unscoured or not boiled off.

Criticism Sometimes Is Over-Drawn.

These fats and waxes permit penetration by water but they act as a resist to the dye. This is just what is wanted and satisfies the demands of dear old Operation A, which is to get the dye evenly spread through the bath without giving any evilly-disposed dye a chance to make Batik effects on the yarn. Now, as the dyebath is slowly raised in temperature, so that there is no appreciable temperature difference between any two points in the bath, the resisting effect of these fats and waxes is gradually lessened and the yarn becomes able to absorb the dye evenly and regularly.

This may be said to be the most fundamental difference between machine dyeing and dip methods and it also is the case that a lack of appreciation of this difference is the cause of considerable uncalled-for criticism of machine dyeing on the part of those who are more familiar with other methods than they are with circulating machines. I have a clear remembrance of a dyer telling me that to dye and boil off in the same bath was totally wrong. I asked him why he thought so and the reply was that he had tried it with his skein dyeing machine and found it to produce bad work. He was quite correct; in the absence of forced circulation the method cannot be expected to operate.. Mechanical circulation comes nearest to the ideal method of dyeing and permits the use of more advanced cost- and labor-saving ideas than any other, but it is unfair to take a

method used for a forced circulation machine and try it on a dip machine, get the inevitable bad results and then argue that the same bad results must therefore be obtained in the closed machines.

Such a method of dyeing without boiling out gives successful results only when the yarn is uniform as regards its coating of fats and waxes. Very rarely is the dyer liable to run into yarn which has been too enthusiastically sprayed with mineral oil, but such yarn is just as difficult to handle by the boiling off method and the trouble encountered should not be held against the dyeing but charged up to the yarn.

What is more serious, however, is the likelihood of this method being used with dyestuffs for which it is not adapted. Dyestuffs are very complicated chemicals and so far as we are concerned there really is no reason why some of them should not be just as capable of dyeing the fats and waxes as they are of dyeing cellulose. This, as a matter of fact, is just what some dyestuffs in common use are very glad to do.

It will be found that there are some dyestuffs which are selective in their action as regards the fats and waxes, just as there are certain dyes which cover both cotton and wool, and others which will cover only the wool or only the cotton but not both, so there are some dyes which will combine with impurities on the cotton and some which will not.

This represents a condition whereby streaky dyeings may be a possibility and it is necessary for the circulating machine dyer to be on the lookout for such dyes and to guard against their use or else to boil out the yarn ahead of dyeing when the use of these selective dyestuffs cannot be avoided.

It will also be found that some few dyestuffs give weak shades when the yarn is not boiled out.

These selective dyestuffs might lead the dyer to say, "Well, in that case I cannot take any chances but must boil out the yarn first, because I cannot be sure that my dyestuffs will not start to combine with the cotton impurities and make streaks."

There are, however, some guiding principles by which the dyer may proceed so that by their use he may with some degree of confidence say to himself, "For this shade I will boil out the yarn first and with that shade I have no need to."

Whatever may be the chemical constitution of the impurities on cotton yarn they fall, generally speaking, into two classes, one of which is emulsifiable and the other of which is not. In other words, it may be said that an emulsifiable agent such as soap will remove the first class of impurities but will not affect the second to any appreciable extent; whereas to attack the second class of impurities requires an alkali and a raised temperature.

When cotton yarn, containing its full quota of natural fats and waxes, is put into the circulating machine and penetrated with water these emulsifiable impurities are placed in a situation much like that of an oyster whose hold on its rocky domicile is being loosened from below. These impurities, the same as the oyster, are now in a position to travel, provided some outside mechanical force is applied, and in a circulating machine, where the liquor is rushing past the yarn, conditions are ideal for these emulsifiable impurities to be swept from the yarn and introduced into the dyebath.

We now have a dyebath containing, in addition to what was put in by the dyer, a proportion of emulsified impurities from the cotton and from what we all know of emulsions under certain conditions these emulsions are liable to break down and precipitate or curdle and in a circulating machine such broken-down emulsions would be liable to cause rings on the package.

The question now arises, what are the conditions which tend to break these emulsions of impurities? We know that under certain conditions these emulsions are stable and do not break down and we also know from said obvious results that at times when we least expect and desire it, that they do break down with disastrous results to our peace of mind.

These emulsifiable impurities of cotton when in suspension in the dyebath of circulating machines seem to be stable until their chemical make-up is profoundly changed. Then they seem to lose their beneficent nature and become antagonistic to the best interests of the dyer and deposit themselves on the yarn so firmly that nothing seems capable of putting them back into the dye liquor again.

From practical experience it would seem to be an alkaline condition of the dyebath that most profoundly affects these temperamental chemical emulsions. Just so long as the dyebath is free from strong alkali and still, of course, not acid, these impurities will stay in suspension even at high temperatures and in the presence of salt and the dyer may sleep peacefully at night, but when soda ash or caustic soda or sodium sulphide is put into the dyebath and the temperature is raised to the point at which these impurities may be hydrolised or saponified or whatever it is that the alkali does to them, then they seem to be in a receptive condition to make trouble.

Sometimes the products of this chemical coupling of cotton impurities may themselves be soluble and so cause no damage, at other times they are insoluble and deposits on the yarn are the natural result.

It is in the presence of caustic soda that the second class of impurities are so apt to make themselves noticed. The heated alkaline solution seems to act on these waxes or whatever they may be, just as heat softens a piece of glass, and puts it into a condition whereby it may flow like a viscous liquid. The continual circulation of the dye liquor through the yarn gradually pushes these "melted" waxes to the two extremities of the package and eventually leaves them producing, when later the dye is put in the dyebath, either a dark or a light ring according to whether

WHEN considering circulating machine dyeing from the viewpoint of what to do or what not to do, it is not advisable to have pre-conceived ideas based on what is necessary and practicable in other methods. The author in this second article on this method of dyeing, points out that some method especially adapted to say dyeing in the skein, which in fact is essential to it for the sake of quality, may not by any means work in the circulating machine; may, indeed, be detrimental to the dyeing. Similarly, there are, as he shows, many methods employed successfully in machine dyeing which, to one familiar only with other methods, would seem entirely wrong and calculated to produce failures every time.

In this article Mr. Schroeder continues his interesting discussion of the subject by covering the features involved in the preparation of the yarn for dyeing. A later installment will cover the subject of dyeing cotton with direct colors.—The Editor.

the dye is one which combines with these waxes or does not. The so-called crocking of at least one particular vat color seems to be undoubtedly due to such a process.

From the foregoing it may be reasoned that dyes requiring no alkali are safe to be dyed in the presence of the cotton waxes, whereas the sulphur and vat dyes, needing alkali, are best dyed in the absence of these waxes.

The next question arises as to how to eliminate these waxes from the dyebath. When alkali converts them into a viscous mass, how is it possible to put them into the boiling-out liquor and so down the drain pipe?

The difficulty of so doing has undoubtedly been the main reason for doing away with any attempt at removing the waxes. It was felt that to attack the waxes only partially, would as explained only lead into worse difficulty. Either these waxes were not to be disturbed at all or else it was necessary to remove them entirely. Half-way measures would not do at all, whatever had to be done, had to be done thoroughly or left alone.

The leaving-alone process, or as it might be called, wetting out in the cold, seems to be suitable for vat or sulphur color dyeing under certain limiting conditions. Where it is possible to use a formula which is hallowed by tradition, in which the desired shade or something not so far off can be obtained the very first time, then it undoubtedly is practical to use such a time-saving method. But the conditions of the trade are changing, and approximations of shades is no longer so tolerated, and conditions being what they are, where the utmost perfection is required, the dyer of experience will recognize that there is danger in using a method which is liable to accident should the dyeing process be prolonged or should the yarn be so tightly twisted that low temperature does not fully penetrate, or should there be a local excess of some mineral oil.

When dyers start to discuss what to use for a boil off then indeed there is a plenty of opinions, in fact there are probably as many opinions as there are dyers. This must undoubtedly be because the problem is not yet entirely solved to the satisfaction of all concerned, and it must be here said that the art of dyeing cannot be so very advanced when we find its exponents so much at variance among themselves as to the proper procedure of the preparation of the yarn before the dyeing is even started.

Some of the difficulty and uncertainty is probably caused by the dyer attempting to do in one hour what the bleacher takes ten hours to do. When dyers' boil-offs and bleachers' boil-offs are compared, it will be seen that, roughly speaking, where the dyer takes one pound of chemicals, the bleacher takes five, and that where the dyer takes one hour, the bleacher takes ten; and whereas the dyer works at atmospheric pressure the bleacher uses higher pressures. Obviously then, the dyer is merely attempting to scratch the surface of his problem where the bleacher is trying to effect a complete solution.

From what has gone before, it will no doubt be recognized that the circulating machine dyer would be better advised to copy bleachers' methods than to adopt open tub methods. In the open tub when impurities that are removed off the yarn as emulsions coagulate, later on, they fall to the bottom of the tub and later go down the drain pipe. Such, as we all know, is not the case with machine dyeing. In circulating machines the dyer is situated much the same as is a bleacher with his kier—that which he removes from the yarn must be kept in the liquor and later run off, if he wishes to obtain an even bottom for his bleach.

Boiling-off involves at least two major operations, the cotton impurities must be first removed from the yarn and then they must be kept in suspension.

We all realize that an alkali is the basis of most boil-off methods and the variation in the boil-off beliefs seems to come with the means adopted to keep in suspension that which the alkali has removed. We hear of certain alkalies, which cause harshness. It may be entirely possible that these alkalies, however effective they may be at removing the impurities, do not possess the power to prevent the subsequent coagulation of the same impurities back on the cotton. We also hear of modified alkalies which if analyzed will be found to have been given increased powers of emulsifying, so really the problem comes down to finding the correct substance to add to the bath to maintain in suspension the impurities which the alkali has removed.

At one time it was believed that the remedy lay in using solvents which would dissolve these impurities, but of late there does not seem to be as much of these as there used to be and most probably what happened was that while these solvents did remove the waxes, they were not powerful enough to stop permanently the subsequent coagulation and the end was worse than the beginning.

Better results would seem to be obtained in the use of hydrogenated hydro carbons, high enough in molecular nature to be able by their powerful personalities to get a good grip on these waxes and maintain them in jelly form so that the dangerous coagulation would not occur. The use of these combined with an effective penetration agent, so that the alkali is carried into the inmost part of the fiber, there to remove the waxes for the hydrogenated alcohols present to keep in jelly form, makes a very effective boil-off for circulating machines.

The foregoing has not taken into account the mechanical action of the boiling-out process on the package.

It will be found that when the method of winding is not the best for the particular type of yarn being dyed that the action of the boiling-out process is to tighten up the wind, so much so that when the package is later washed off in cold water before dyeing it is made so hard that the subsequent dyebath will not penetrate the package. This has caused many a circulating machine dyer to wonder whether boiling-off did not in fact do more harm than good, but it will be found nowadays that improved winding machinery is giving the dyer more of a chance to use proper methods of boiling-off and dyeing than he had before the problem of winding and its importance were so well understood.

[The next article by Mr. Schroeder, under the general head of package dyeing in circulating machines, will discuss the dyeing of cotton with direct colors. It will appear in an early issue.—The Editor.]

SPARTANBURG GETS ROGERS FIBER FACTORY

It is announced that the Rogers Fiber Co., of Boston, Mass., and Kennebunk, Me., will establish in Spartanburg, S. C., a factory for the manufacture of "Leatheroid" mill receptacles. The company has leased the building formerly occupied by the Star Hosiery Co., on Arch Street, and will soon begin operations.

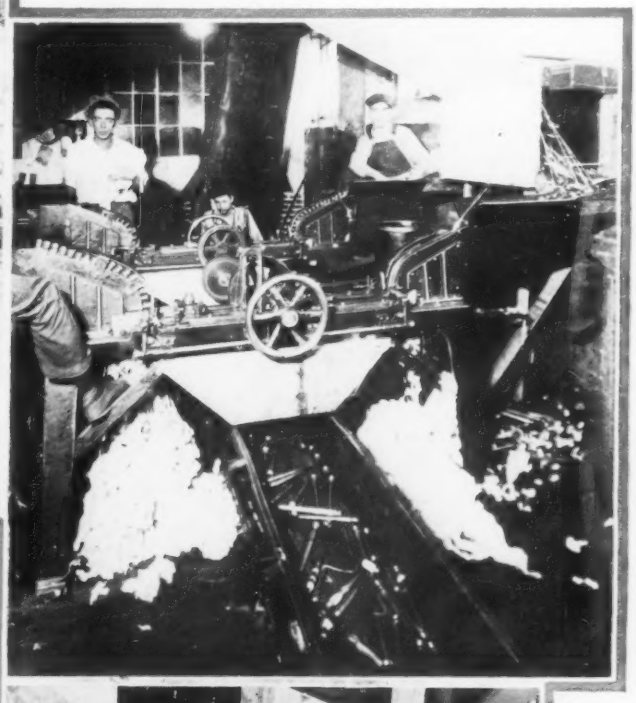
"Leatheroid", the trade name of the Rogers Fiber Company line, is widely known among the textile mill men and has the distinction of being one of the few trade names to find its way into the dictionary.

Material Handling Methods in Textile Mills

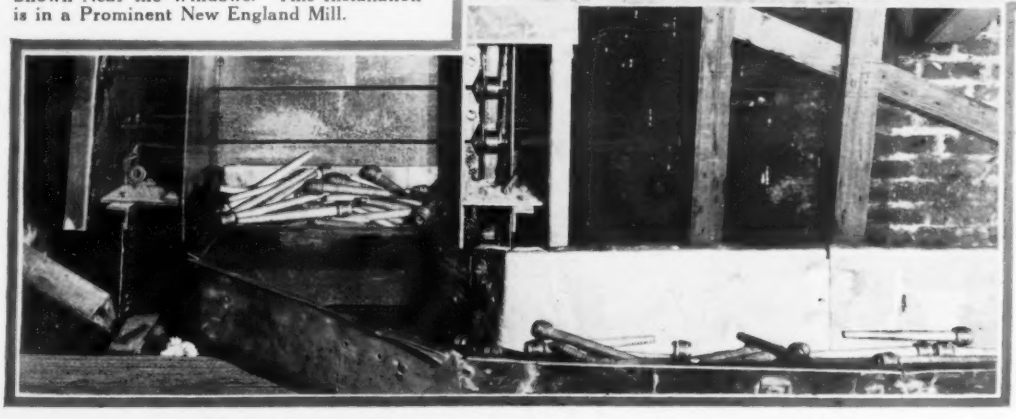
THESE special pages are given over to illustrations of various applications of material conveying equipment in a number of different textile plants, mainly in the South. They show instances of how gravity and power are being utilized in different ways for eliminating manual labor, speeding up production, and a consequent reduction in cost.

While many mills feel that with their existing plants, the opportunity possible in the application of conveying methods may not be so great in the major features of the manufacturing operations, these views will illustrate a variety of usual and special uses to which conveyors have been applied to advantage under the conditions.

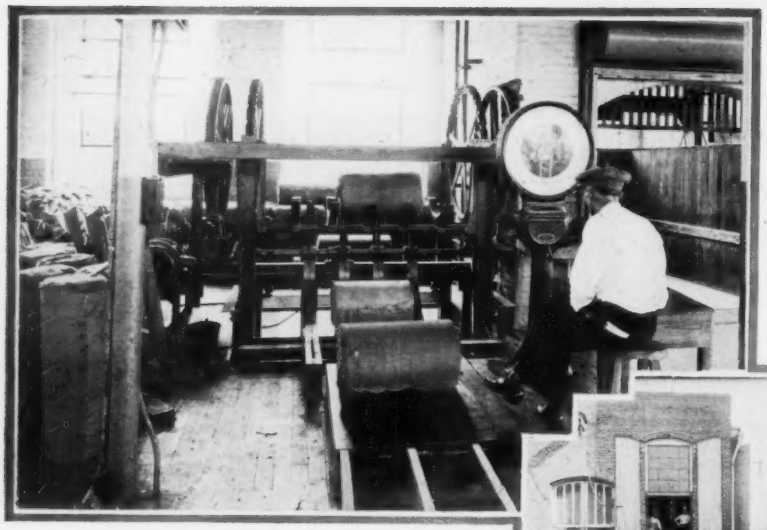
Many plants, due to local conditions, undoubtedly have peculiar circumstances that present a problem in material handling. It is not supposed that all of the applications shown could be applied elsewhere bodily, but they do show what several plants have done to overcome local problems in the handling of their material, supplies, etc.



Above, the Roving for the Spinning Room is Brought, in Boxes, via the Spiral Chute from Card Room Upstairs, Placed on Special Trucks and Taken to Frames. Empty Boxes are Returned to the Card Room by Means of the Inclined Finger Conveyor Shown Near the Windows. This Installation is in a Prominent New England Mill.

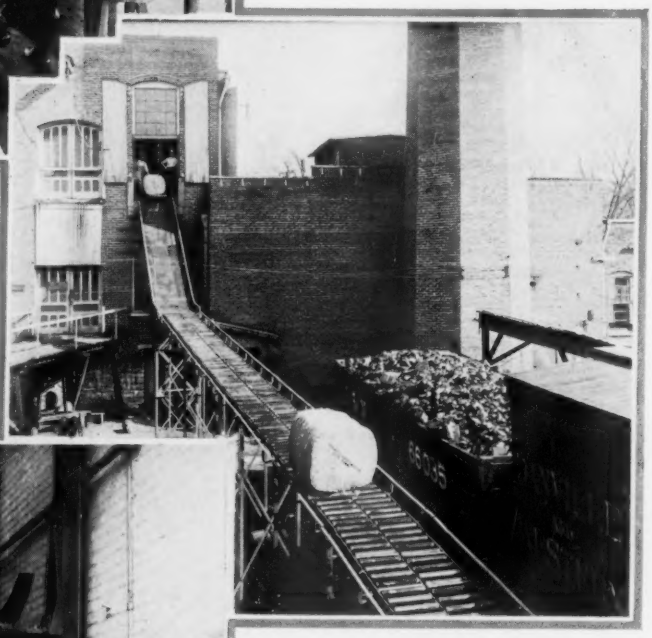


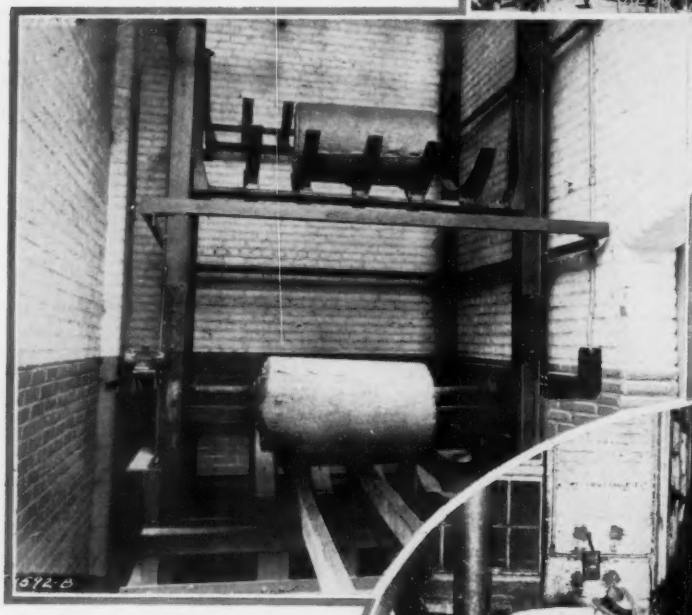
The Cleaned Quills Ejected by the Machine Above Go by Gravity to the Belt Conveyor Shown Below, from Which the Bucket Type Conveyor Returns Them to the Spinning Room.



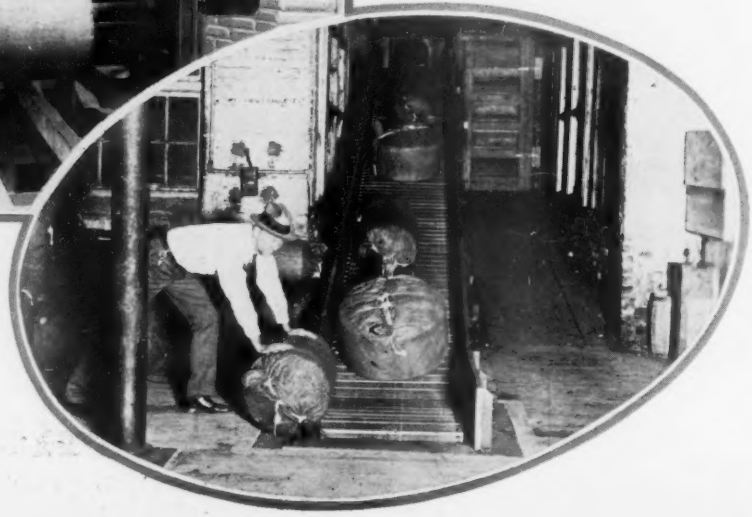
To the left, A Bleachery Application of a Conveyor to and from the Second Floor. The Bales of Cloth Are Rolled Onto the Platform of the Automatic Scale, To Which is Attached Also an Automatic Counting Device for Counting the Number of Bales. The Goods for Outgoing Shipment Are Thus Handled in an Efficient Manner. The Direction of the Conveyor's Travel is Reversible, so that It May Also Be Used for Conveying Incoming Materials to the Second Floor of the Building.

Below, A View of Another Section of the Conveyor Shown in the Top Picture. The Fingers Carrying the Bales of Goods Automatically Discharge Their Load Onto the Inclined Platform, Down Which They Roll to the Shipping Platform Outside. Since the Direction of Travel is Reversible, Incoming Material Can Also be Handled by this Conveyor.

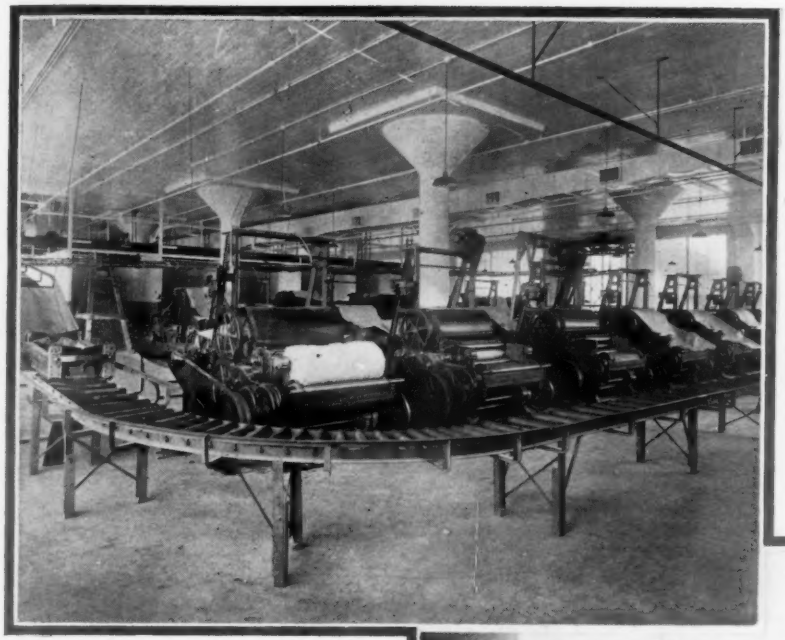




An Alabama Yarn Mill Uses the Outside Gravity Roller Conveyor Shown Above. By this Means the Baled Yarn is Handled Directly from the Packing Room to the Loading Platform at the Tracks.

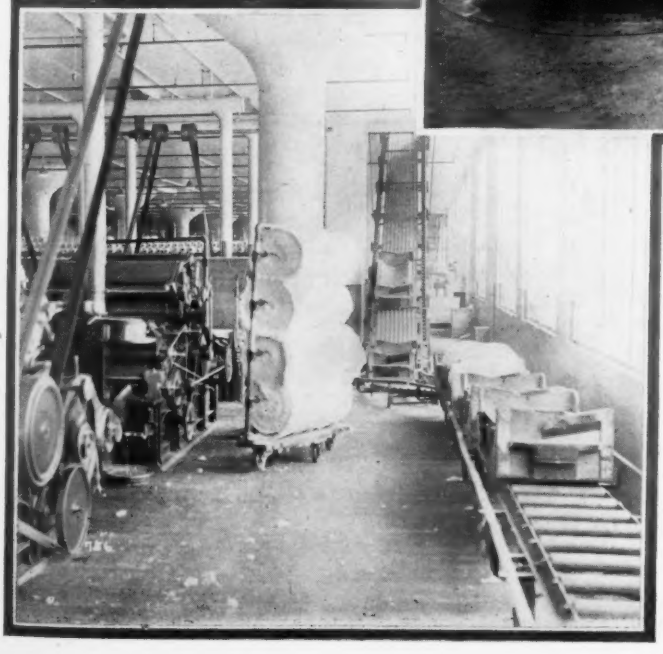


In the Oval is Shown Another Yarn Mill Application. Ball Warps to be Sent to the Mercerizing Plant in Another City Are Conveyed to the Shipping Platform by this Inclined Slat Conveyor from the Basement. The Mill Reports An Interesting Saving in Manual Labor and the Amount of Time Involved.



The Photographs on This Page Show An Interesting Conveyor Application, Arranged in the Course of the Laying Out of the Mill, for Transporting Laps from the Picker Room to the Card Room on the Floor Below. To the Left is a View of the Roller Gravity Conveyor in the Picker Room. On this Conveyor, at the Extreme Left, is One of the Cradles on Which the Laps are Placed. These are Especially Designed to Prevent Damage to the Laps. The Cradles Containing the Laps Move by Gravity to the End of this Conveyor, a Detail View of Which is Shown in the Photograph Below.

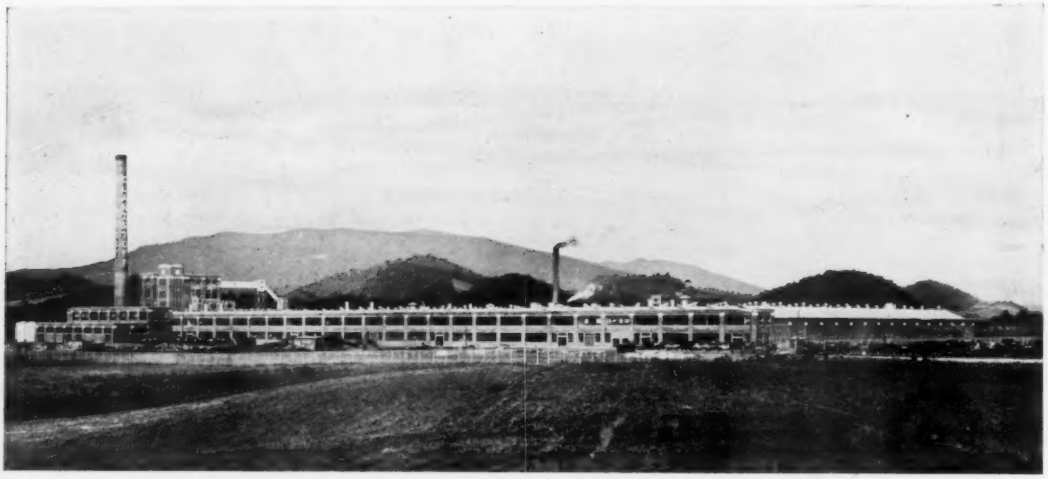
The Man Shown in the Photograph to the Right Uses the Automatic Scale Shown for Weighing and Checking the Laps Going from the Picker Room Downstairs to the Card Room. A Lap Fitted in the Cradle May Be Seen Just Disappearing at the End of the Roller Conveyor, Into the Spiral Chute Which Delivers the Material to the Card Room on the Floor Below.



At the Left is Seen the Terminus of the Picker Lap Conveyor. In the Foreground Will Be Noted the End of a Roller Conveyor Onto Which the Lap Cradles Come to the End of Their Journey Loaded with Laps. Here the Laps Are Removed from the Cradles and Placed on the Lap Trucks for Use on the Cards. In the Back of the Photograph is a Finger Type Conveyor by Which the Empty Cradles Are Returned to the Picker Room Upstairs.

(The Photographs Used in this Section Were Supplied by the Standard Conveyor Co., and Mathews Conveyor Co., Who Made the Installations.)

Another Huge Rayon Plant Starts Operations in Eastern Tennessee



The new rayon manufacturing plant of the American Glanzstoff Corporation, at Elizabethton, Tennessee.

PRODUCTION in the new rayon manufacturing plant of the American Glanzstoff Corporation, Elizabethton, Tenn., was begun on August 1st, a month ahead of the date predicted in February. The entire development was completed, from the turning of the first shovelful of dirt, to the production of finished yarn, within less than eleven and one-half months.

The capacity of this plant, in full production, will be between 4,500,000 and 5,000,000 pounds of 150 denier yarn per year. All yarns produced in this plant will be of the new type with 32 filaments for 150 denier yarns. Full production is anticipated early in 1929. The new plant was constructed as one unit of one half the ultimate size contemplated, and lay-outs made to provide for the construction of the second unit.

Plans for the plant were prepared in Germany by the engineering department of the company, based upon their experience with constructing and operating a number of European plants. All provisions were made for convenience in operation, economy of material handling, the control of quality, etc. Lockwood, Greene Engineers, Inc., with W. G. Norteman as resident engineer, carried out the direction of erecting the plant.

The American Glanzstoff Corporation have been importing yarn at the rate of several million pounds per year, principally in the fine numbers and of multiple filaments. On account of the fact that there is a considerable demand for imported yarn because of the return duty for rayon products exported, it is stated, the company will continue the importation of yarn at approximately the present rate, and in addition to selling the output of the new plant in this country. Sales organizations in various textile centers, provided with experts in weaving and knitting, have been built up.

The site of the Glanzstoff plant is located at Elizabethton, immediately adjoining that of the American Bemberg Corporation. The officials of the American Glanzstoff Corporation are: Dr. Arthur Mothwurf, president; B. C. Dunlop, vice-president, and in charge of the New York office; and A. L. Erlanger, secretary and sales manager. The concern is a member of the Rayon Institute of America, Inc.

That Happy Valley, the section of Tennessee in which Elizabethton is located, will expand still further as a rayon producing area is indicated in recent announcement that the American Bemberg Corporation, which is finishing its second unit, plans for still greater plant enlargement soon; and that the Glanzstoff properties will also be extended upon a large scale.

CURRENT TOPICS

The Gold Current Changes

BETWEEN June 30, 1927, and the same date this year a total of $607,102,000 worth of gold was shipped from the United States. This export was offset in the extent only of $129,139,000 worth of gold imported into the country. It is stated authoritatively that there is now produced in the United States, including Alaska, only about as much gold as is consumed here in the arts. We are dependent on the rest of the world for monetary gold. The World War and its immediate aftermath saw the tide of the world's free gold run almost solely to the United States, causing our reserve stock of the metal to about double. About half of the world's monetary gold accumulated in the United States.

Now the tide turns, and in one twelve-month period reduces the country's stock of gold in the extent of almost a half billion dollars' worth. What this means nobody seems to know clearly. It may owe in much part to foreign loans, and, if so, this means that borrowers abroad are taking American advances in cash for the making of purchases elsewhere instead of taking loans largely in goods as apparently was the case at first. Our merchandise foreign trade declined during the period of big outflow of gold. This happened when the world's total of international trade was increasing slightly. The decline in ours wasn't enough to be disconcerting, but it may evince a changing of important relationships.

There still is in the United States much more gold than apparently is needed, and in many other countries much less. A remarkable economic phenomenon of the time was the "sterilization" of the country's excess of gold, which thus was kept from having an inflating effect on prices. Shortage of gold elsewhere did not have a greatly deflating effect even in those countries which restored the gold standard. The American dollar, rather than gold bullion, became the world's real standard of currency and exchange. The dollar's supremacy may be passing with the redistribution of gold, which apparently is regaining its old status. World production of gold, actual and in prospect, does not portend an increase in supply equal to growth of trade. This, with gold's restoration, may forecast a period of lowering price levels, like that between the 1870s and the late 1890s.

The outflow of the metal from the United States indicates that much of the addition to this country's stocks of gold during the period of economic dislocation was merely nominal. Much gold actually was "earmarked" as property belonging elsewhere. Large quantities of gold sought a haven of safety in this country. Now that monetary stability has been restored in most other quarters "refugee" gold is leaving us. It may be that a large part of our lending abroad has been only clearing of foreign capital that had come here for protection.

Whatever the effect in this country, the redistribution of gold should make for more stable and more accurately calculable world conditions.

By Products of the Presidential Campaign

TOWARDS its close the most interesting national political campaign in twelve years—in truth, about the only real national contest since 1916—wends its fervid way. The primary products of the result may not be as important as the by-products. Whether it is Smith or Hoover, the White House will be occupied after March 4th next, by a virile, capable, well-trained, honest and patriotic man. The election result should have no vital bearing on the course of government during the next four years. Yet the returns will comprise material for adjudging many equations in the present make-up and future course of the nation.

They will show, for instance, whether there is any such thing as a "woman vote," that is, as a controlling quantity in elections. The record so far indicates that the "woman vote", like all other similar group "votes", is a myth, and that women divide at the ballot box almost exactly as men do. This doesn't mean necessarily that they follow their men folk but that apparently men and women go along together in politics. The peculiar issues of this campaign should bring about a conclusive showing as to this question of practical politics.

The returns may show whether the time is at hand or is likely to be here soon when the "Solid South" may be broken politically.

They may indicate a good deal about true public opinion on the prohibition issue without forecasting any immediate change of national policy.

The returns will reflect the extent in which the question of religion counts in the high currents of American politics. And they may show whether those currents still flow with fair constancy within party lines.

Perhaps most important of all, the result of the election will demonstrate, more than any other national contest has done, the eminency of a division between what might be termed old and new America. Is the thought of the country, like its population, now more of the urban than the rural gravity? In the shaping of that thought are the new elements of the population more potent than what is known as the old stock? The election may supply answers to such questions. But it may be necessary to hunt for some of them.

Gregg Announces Hart Scholarship Awards

THE scholarship fund of $500.00 offered each year by The Hart Products Corporation through the Southern Textile Association to aid worthy boys and girls to obtain college educations, has been awarded for 1928, according to announcement by J. M. Gregg, secretary of the Association. Two scholarships of $250.00 each were awarded to Marvin Amos Law, Paw Creek, N. C., and Steele Milton Mulwee, Pacolet Mills, S. C. Both will study textiles—Law attending North Carolina State College, and Mulwee going to Clemson College.

Elsewhere in this issue is an item announcing another award established through the Association for members, by L. Sonneborn Sons, Inc.

Tariff Revision Seems Certainly To Be on the Way

IT SEEMS to be agreed among men who—however the November election goes—will be leaders in the next Congress, that a general revising of the tariff will be undertaken soon, probably next year. It is not unlikely that, whether Hoover or Smith is President, Congress will be called into special session, early next Fall probably, for that purpose. It is not likely that anything will be done about the tariff—or much else of importance—at the short, and last, session of the 70th Congress this winter. And, unless trends of thought change radically, it will be difficult to get the 71st Congress to do much else of importance until the tariff question is attended to again.

The average life period of tariff acts has been less than ten years. The present law was adopted in 1922 when conditions were quite different from what they are now. But conditions have not changed nearly so much as has the setting of the tariff question. The next threshing out of this difficult problem will be beset by so many new factors that the affair is apt to be the most extraordinary of its kind. Wise business men will begin to give thought to it even though the undertaking is rather vaguely in the distance.

Tariff revision invariably produces a situation of uncertainty provocative of hesitancy in industry and trade. This has not been overcome by the apparent agreement between the big political parties on the principle of protection. For academic principle will count for less in the next tariff fight than ever before—and it always accounted for more talk than action. The present and prospective set-up portends a complicated problem of adjustment more than an elemental question of low or high tariffs.

The farm problem is being merged with the tariff question and both probably will be dealt with at the same time. Farm groups are preparing to ask for prohibitive tariffs, and means for making them effective, on practically all farm products. This will bring up the question of valorization in the manner of something like the "equalization fee" plan. If effective, prices of food and many raw materials of manufacture will be boosted. Some kind of help will be demanded even for raw cotton, despite the large export surpluses. Tariff duties probably will be imposed on those varieties that meet competition from abroad.

There will be demands by farmers and others that articles which compete only indirectly with American products be subjected to high tariffs when imported into the country.

The manufacturers' angle of the problem may be as confused as that of agriculture. This, also, involves questions of effectiveness. Finished manufactures now constitute about 40 per cent of the country's exports. The proportion has doubled since the beginning of the century. Exports of manufactured goods amount to more than ten per cent of production, calculated on the basis of value added to raw materials. More and more manufacturing groups are growing beyond the bounds of protective tariffs and have to depend in increasing extent on foreign sales for full-time operation and further expansion. Leaders in some of these groups are veering towards the view that the more we import the more they can sell abroad. Most of them still are theoretical protectionists, but even many of these are being pushed by expediency towards the other side.

New factors bearing on the effectiveness of tariffs have arisen. One of the most difficult is that of transportation costs. The widened margin between ocean and land carrying rates now enable foreign producers to meet high tariffs and undersell in seaboard areas many American producers who are well protected in inland areas. It was discovered that pig iron could be brought from smelters in India to the North Atlantic coast for less than it cost to move this product from Birmingham to New York City. Along the Atlantic seaboard plate glass made in Belgium has, it was found, a big advantage, on account of transportation costs, over plate glass made in West Virginia and Illinois. Argentine corn can bear a 15 cents a bushel tariff tax and be delivered to the San Francisco consumer at 11 cents a bushel lower price than Iowa corn even when the Iowa and Argentine producer receives the same.

Must tariffs comprehend the transportation factor and be made to "protect" the railroads and safeguard domestic industries regardless of location? Thus the railroad question and the distribution of industry become linked with that of the tariff.

Then there is the international angle, becoming more and more acute. The Governments of several countries are threatening reprisals against American goods on account of high tariff barriers at our ports. Cuba is angered by the tariff on sugar, Argentina by barriers to its beef and corn. Europeans are asking how they can meet large debts, still growing, owed by them in this country, if the products of their labor be excluded. Trade between the United States and Europe has been declining proportionately. More than 50 per cent of our exports have looked to European markets for consumption. Some claim that Europe can pay by sending manufactured goods to areas like South America and the Far East to cover raw materials, such as coffee, rubber and silk, imported into this country. But won't those European exports take the place of ones which might go from our surpluses into the same areas?

All students of the economic situation of the world say that one of the worst obstacles to improvement are the multiplied barriers which have been erected on the elaborated national boundaries of European countries. And they say the probably biggest reason for America's present economic pre-eminence is the fact that the United States comprise the biggest free trade area in the world. Americans did not dissent from the pronunciamentos of the international bankers, the Geneva Conference and the International Chamber of Commerce against "trade barriers", including by inference tariffs.

The prospective mood of the next Congress is, as to the tariff, more unique than all else. Primarily Congress is likely to be for giving everybody everything asked for in the way of tariffs. In lieu of letting everybody write their own rates as to their primary products, Congress may veer as extremely the other way and cut all rates to the bone. Freed from the old low tariff tradition of their party, Democrats in Congress may have all the fanatical fervor of new converts for protection. Old line Republicans may have to lean the other way in order to prevent the passage of a bill so extreme and inclusive as to make protection self-cancelling. There will be no clear-cut party division, as hitherto, on the question as a whole. This will make for the supremacy of log-rolling.

Watch the subject.

Chlorine–

Servant of Industry..... Guardian of Public Health

WITHIN recent years, Liquid Chlorine has quickly developed into a servant of broad usefulness to both industry and the general public.

Today, Chlorine is widely used in sterilizing municipal water supplies, in disinfecting sewage and in eliminating noxious sewage odors and gases from industrial wastes.

Industry finds constantly increasing uses for Chlorine in its various forms. It is an indispensable basic ingredient in the manufacture of many valuable chemical products. Each year thousands of tons of Liquid Chlorine are used by the paper and textile industries for bleaching purposes. In petroleum refining and in flour milling, Chlorine plays an important part in manufacturing and processing. Because of its powerful germicidal properties, Chlorine is also widely employed in compounding disinfecting and sterilizing agents, both for industrial and household uses.

To widen the field of usefulness for Chlorine and Chlorine products has been Mathieson's purpose since the earliest stages of the industry. Mathieson was first to introduce and use the multiple-unit tank car and to perfect safe methods for handling Liquid Chlorine. Today Mathieson stands at the forefront in the development of this product of untold uses—a product that despite its recent amazing growth is at the threshold of an era of still greater development.

MATHIESON Industrial Chemicals

CAUSTIC SODA
LIQUID CHLORINE
BICARBONATE OF SODA
MODIFIED VIRGINIA SODA
SODA ASH
BLEACHING POWDER
ANHYDROUS AMMONIA
AQUA AMMONIA

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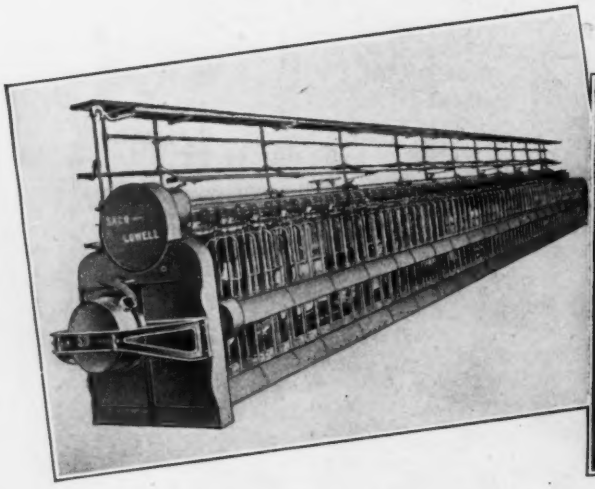
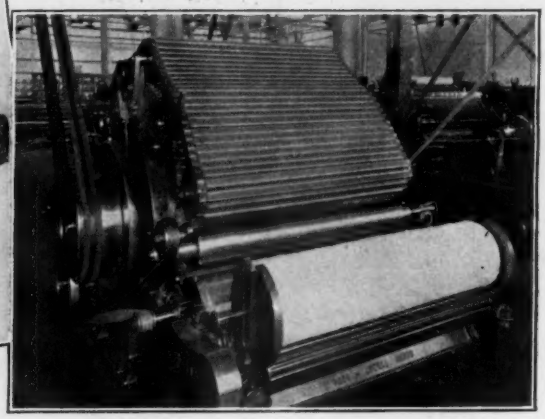
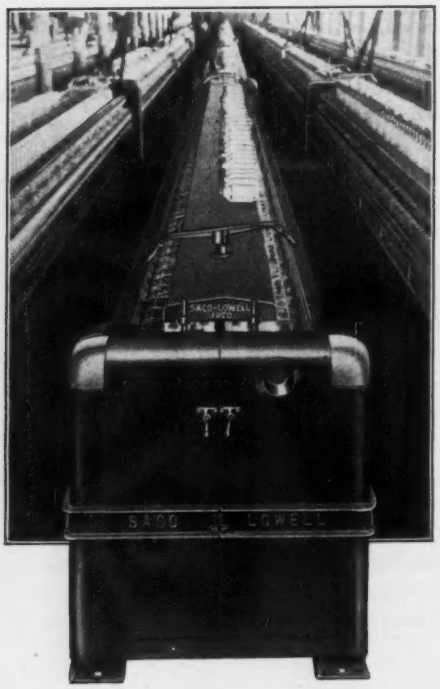




SACO-LOWELL *Presents* Many New Textile Developments



A DISPLAY of the unusual number of new developments in Saco-Lowell textile machinery made during the last few years will be a prominent feature of the Greenville Show this month. Many new machines will be exhibited in operation,—each one with outstanding mechanical improvements that will surely be of interest to you.

You will want to see Saco-Lowell's:—

Revolving Flat Card with Continuous Stripper

Long Draft Spinning

One Process Picker
(with synchronized control)

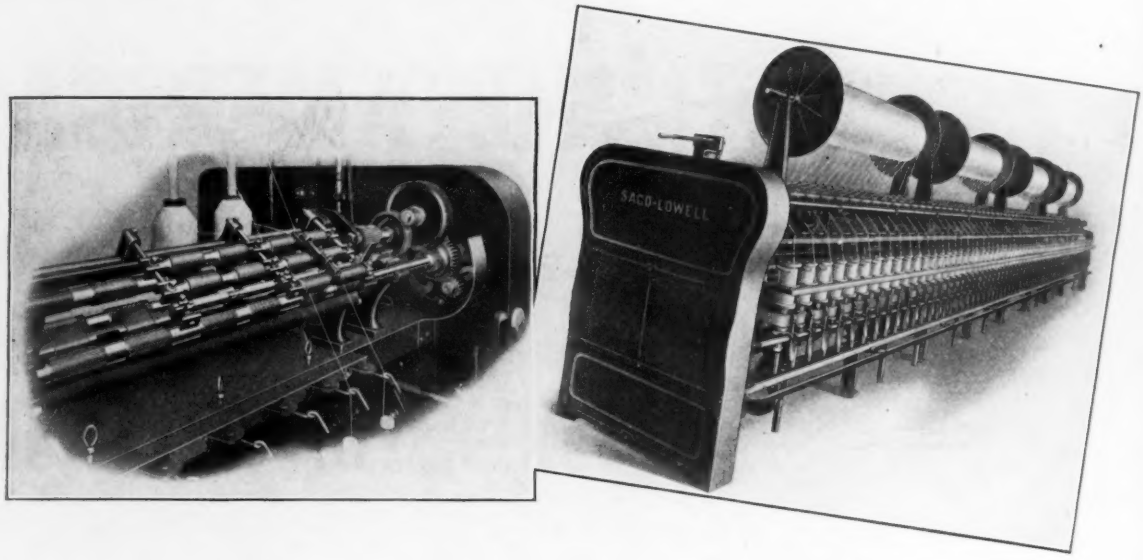
New Roving Frames with Chain Drive

Large Package Spinning

High Speed Warper

High Speed Twister

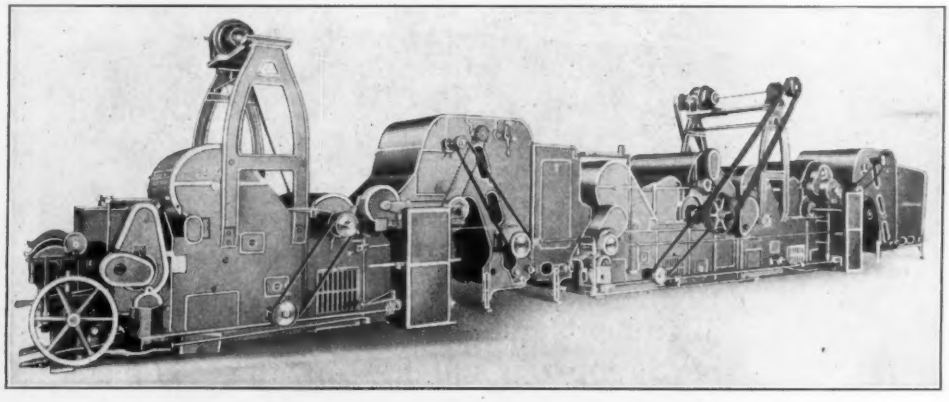
These are some of the high spots of one of the greatest displays of textile machinery development in modern times. It is important that you see them—on display at the Greenville Show September 15th to 20th.



at the Greenville Show

An Invitation

Saco-Lowell's exhibit will be in our usual space No. 216 on the second floor of the Greenville exhibition building. Ample facilities are available for the comfort of our guests. Please feel free to make our booth your headquarters throughout the show. You'll find our exhibit of unusual interest—the center of attraction, as usual.



SACO-LOWELL

MANUFACTURERS OF TEXTILE MACHINERY

147 Milk Street, BOSTON, MASS.

CHARLOTTE, N. C. GREENVILLE, S. C. ATLANTA, GA.

H & B AMERICAN

PAWTUCKET

MAKERS OF COTTON

— REPUTATION —

Behind every machine which we produce lies a reputation for honesty, stability and industry. This is your guarantee, which when purchasing our products insures you against loss through experiment and depreciation.

Long after the purchase price has been forgotten our machines retain their alignment and setting, turning out work of a superior quality to the complete satisfaction of their owner.

MACHINE COMPANY

RHODE ISLAND

MILL MACHINERY

— SERVICE —

Through the efficient service of trained experts our machines in all parts of the world continue to function faultlessly. Our motto is to "sell and serve" and some of our most prized relationships have been established through the medium of our service men.

Famous as we are for the high quality of our products, we appreciate the necessity of periodical examinations to keep existing equipments tuned up to the highest standards.

What The Southern Mills Are Doing

BUCK CREEK Cotton Mills, Siluria, Ala., are replacing old equipment with 250 new looms, two high speed warpers and four winders, which will cost approximately $80,000.

The Merrimack Manufacturing Co. has acquired 240 acres adjoining their mill at Huntsville, Ala.

Construction on the main building of the mill of the Alabama Mills Company at Clanton, Ala., has been started.

The Lincoln Mills Corporation, Huntsville, Ala., are preparing for the erection of a new mill unit and a new mill village of houses to be occupied by operatives.

General contract for construction of buildings in the first group of the American Chatillon Corp., Rome, Ga., has been awarded to Hughes-Foulkrod Co., Philadelphia, Pa.

The High Shoals Manufacturing Co., High Shoals, Ga., is contemplating the rebuilding of its plant which was recently destroyed by fire. The building, it is reported, will be of brick, three stories high, to contain 10,000 spindles.

Echota Mills, Calhoun, Ga., have let contract to Chapman & Camel, Griffin, Ga., for an addition 185 x 150 feet. They will also erect a warehouse.

The Norwood-Griffin Company, Atlanta, Ga., has been awarded the contract to build an addition to the Scottdale Mills, Scottdale, Ga. The addition will be two stories high, 260 x 100 feet an will accommodate 115 looms with sufficient spindles to care for the additional looms.

It is announced that a company is being formed at Hartwell, Ga., for the erection of a 8,000-spindle mill.

January & Wood Co., Maysville, Ky., have awarded contract to J. C. Simmons, local contractor, for a three-story addition. The building will be used as a storage and packing plant for finished goods.

The Rountree Cotton Mills, Meridian, Miss., are installing one 12 ball warp continuous indigo machine, built by the Cocker Machine & Foundry Company, Gastonia, N. C. It is announced that the mill will make denims and other numbers requiring indigo dyed yarns.

Allen Lisle Silk Co., Wadesboro, N. C., recently organized, is now in operation. The plant is housed in a three-story frame building, 45 x 150 feet and is equipped with 640 spindles.

The Union Mills, Maiden, N. C., are replacing five old cards with six new ones.

The Enterprise Manufacturing Co., Coleridge, N. C., is installing 2,000 additional spindles and new twisting and winding equipment.

It is reported that the Roxboro, N. C., plant of Collins and Aikman will be enlarged by building an addition 200 feet long.

Excelsior Yarn Co., Burlington, N. C., has been granted a charter to manufacture and otherwise deal in yarns, cloth, hosiery and other knit goods.

The Cross Cotton Mill Company, Marion, N. C., is installing a Roth-French new system long draft spinning machine.

Cannon Mills Co., Kannapolis, N. C., is building an addition to the office building to provide for the increase in the accounting department due to the recent merger.

Carolina Bagging Co., Henderson, N. C., is erecting an addition for storage purposes. It will be of brick with a concrete floor and asbestos roof, 150 x 150 feet.

It is announced that the Grimes Fabric Co., Lexington, N. C., will install additional looms in the silk mill.

Contract for construction of the buildings for the Standard Looms, Inc., Spartanburg, S. C., manufacturers of textile looms, has been awarded to Fiske-Carter Construction Company, Greenville, S. C., Lockwood Greene & Co., are the architects and engineers.

Jackson Mills, Wellford, S. C., have let contract to J. C. Cunningham, Greer, S. C., for the erection of a picker room to be three stories 100 x 75 feet.

It is announced that the Judson Mill No. 2, Greenville, S. C., will again resume operations after being idle since last April.

The Arial Mills, Arial, S. C., will be equipped with new Whitin spinning and not with used equipment from New England as originally reported.

The Travora Cotton Mills and the Neely Manufacturing Co., both of York, S. C., have been purchased by J. E. Johnson of York; J. T. Hedrick, and J. T. Hedrick, Jr., of Lexington, N. C. It is understood that the mills will be consolidated into one company under the name of Travora-Neeley Mills, Inc.

Work has been started on the new weave shed of the Southern Weaving Co., Greenville, S. C., to be 60 x 154 feet. The Gallivan Building Company, Greenville, S. C., has the contract.

Through the southern office of Lockwood Greene, Engineers, Inc., contract for construction of new weave room extension and cloth room for the Chesnee Mills, Chesnee, S. C., has been let to Grier-Lawrence Construction Co., Statesboro, N. C. Through this office also contract for construction of a new mill buildnig for Joanna Cotton Mills, Goldville, S. C., has been let to Fiske-Carter Construction Co., Greenville, S. C.

It has been announced that the Lovera Cotton Mills, Trenton, Tenn., have been bought by the City of Trenton.

It is reported that the Kingsport Silk Mills, Kingsport, Tenn., have purchased five acres on which to erect a silk mill, 180 x 165 feet. The mill is to be one story brick construction.

It is reported that the Welwood Silk Mills, Inc., 2 Park Ave., New York City, will erect a 20,000-spindle silk throwing mill at McMinnville, Tenn.

Contract for the construction of the plant of the Industrial Rayon Corporation, Covington, Va., has been let to the Fiske-Carter Construction Co., Greenville, S. C. Work on the new plant is to start immediately.

It is reported that the Harry Aronshon Throwing Co., 21 Market St., Paterson, N. J., will erect a silk throwing mill at Alexandria, Va., the building is to be 65 x 275 feet.

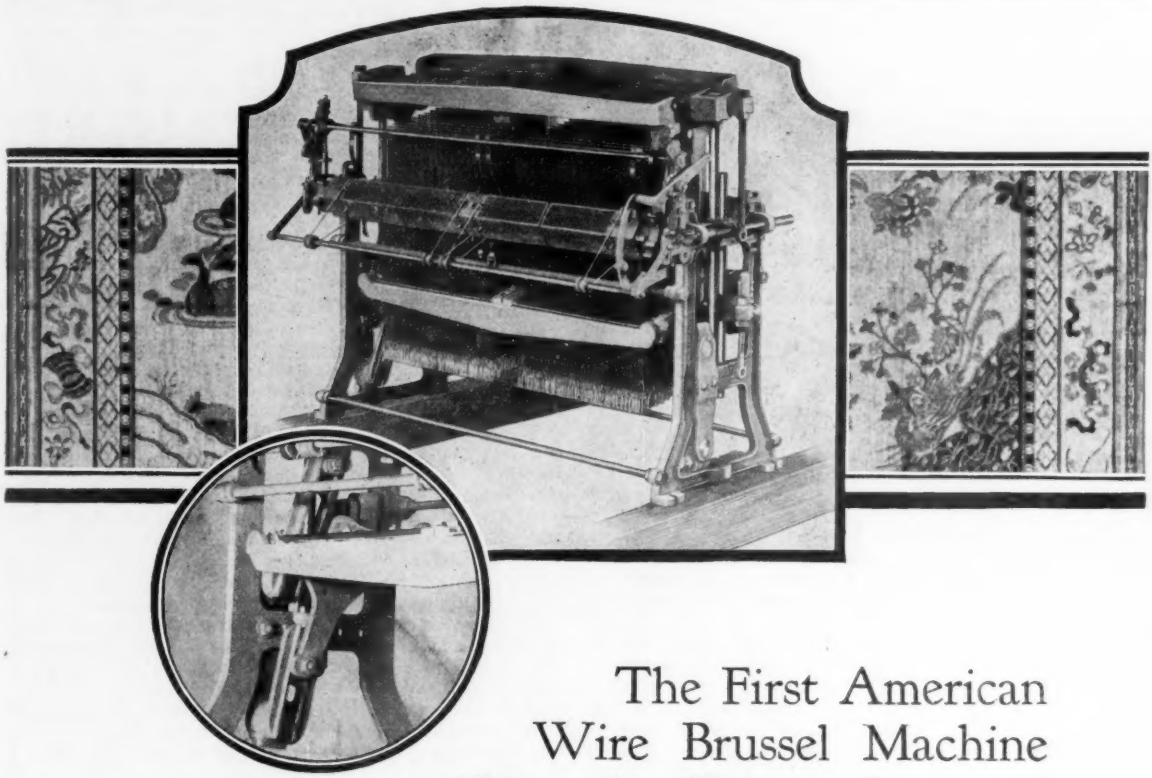
New England Mill Situation.

September 15th, 1928

MANY forms of compromising the strike now in its twenty-third week in New Bedford mills are being suggested. At this writing there is apprehension expressed that one or two of the manufacturers desire to take down the wage notices of a ten per cent reduction. On Monday, the 10th, the manufacturers made a statement to a citizens' committee in response to efforts made by them to bring about a compromise, that they were willing to undertake the installation of a specialization system in manufacturing but conditioned their acceptance of what is termed the Frieder plan of multi-machine attendance provided the ten per cent reduction was accepted.

This offer was refused pre-emptorily by the trade union leaers in a curt statement even sharper than anything that has appeared in the way of exchanges between the contending parties since the strike began. The report persists that the managers of the Wamsutta mill desire to resume operations in order to supply the demand for a new type of colored bordered fine sheets that the corporation has been advertising widely in the magazines of the country during the past few months. It is very doubtful what action will result in the event of any single mill withdrawing from the agreement made in April to reduce wages.

The news of the predicted break was circulated very generally in the New York markets during the week of the 10th while the annual convention of the United Textile Workers was in session. This body took over the unions in New Bedford when the strike began and through the American Federation of Labor has done much to collect funds and to maintain public sympathy with the strikers. The community sentiment in New Bedford continues very strongly against the manufacturers and this week Judge Hitch of the Probate Court, a stockholder and director in some of the mills, published a statement advising compromise lest the



Detail, Showing Oscillator

The First American Wire Brussel Machine Was A Halton Jacquard

Some of the Carpet Mills where Halton Jacquards are giving satisfaction in performance and durability.

Barrymore Seamless Wiltons, Inc.,

Hardwick and Magee Co.,

A. & M. Karagheusian Co., Inc.,

Mohawk Carpet Mills, Inc.

AMERICA'S need for wire Brussel Machines, other than those of foreign make, was first satisfied by Thomas Halton's Sons. As specialists in all types of Jacquards, it is natural that the first inventions and latest improvement of Jacquards have always been developed by Halton.

The Fine Index Wire Brussel Machine shown above, in addition to weaving designs for three or four yard Seamless Wilton, as pictured, is also adaptable to pile plush. Its oscillating top and bottom represents the apex of Jacquard development.

Every Halton Jacquard is manufactured to render superior performance and to allow intricacy of design. Wherever COTTON, WOOL, or SILK manufacturers desire the best in Jacquards, they turn to Thomas Halton's Sons. Past performance guarantees future satisfaction.

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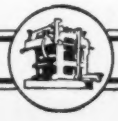
• A HALTON JACQUARD FOR  EVERY DESIGN AND PURPOSE •

consequences of a protracted struggle become more serious than is now contemplated.

Manufacturing interest throughout New England is very strongly in favor of maintaining the position of the mills in the matter of wage reduction. The strike has undoubtedly given the United Textile Workers a much stronger hold among textile operatives, partly because of the feeling that this particular union is fighting against the communist's organizations that are playing havoc in textile centers. While the effort is made in New Bedford through newspapers and in other ways to decry the importance of the communist union influence during this strike it was apparent in a parade or rally of the operatives on Saturday, the 8th, instant, that at least 4,000 men and women were willing to be classed in that organization.

The two labor organizations representing the U. T. W. and the communist body held separate parades but there were many more in the ranks of the latter than in the former. Most of the English speaking operatives were in the U. T. W. ranks while the other parade was made up largely of Portugese, Poles, and other foreign races. It is believed that a substantial part of those who have been causing the most serious trouble in the city are not citizens. They bore small badges on which opposition was presented to the acceptance of any form of compromise with the manufacturers or the adoption of what they called a "speed-up plan" of working.

Anxiety concerning the outcome of the strike is felt most strongly in the larger centers of textile operations for the reason that if the U. T. W. is successful in winning against the manufacturers they will proceed to inaugurate strikes in those sections where similar reductions were accepted earlier in the year. The attempts of communists to inaugurate a strike in Fall River were unsuccessful in the mills of the American Printing Co., Algonquin Printing Co., and the Lincoln Manufacturing Co., largely because the police, newspapers, courts, and the public generally were outspoken in opposition to the leaders of the strike. When offenders were brought before the police court there, heavy fines and jail sentences were imposed.

Up to the present time more than $10,000,000 has been lost in wages, while the owners of many houses in New Bedford have been unable to collect rents and have suffered other losses. While lurid stories have been published of suffering being endured by the workers there was nothing in the appearance of paraders and there has been nothing in the actual state of affairs in the city to indicate that the strikers and their families have found difficulty in going along. The picketing system about the mills has been maintained, but in a greatly modified form and the worst forms of agitation by the communist workers have been supressed.

A recent report showed that stocks of goods on hand among the fine goods mills of the country were substantially as large in the twenty-third week of the strike as they were when the trouble began in April. A tabulation of prices current for the more staple classes of goods made in New Bedford mills showed that very few prices were higher and many were lower than in April. The curtailment of production in fine goods is fully 50 per cent of capacity and the fine goods mills associated with the Fine Goods Association and the Cotton-Textile Institute outside of New Bedford are still curtailing from 20 to 25 per cent of capacity. In New Bedford where the Dartmouth Manufacturing Co. did not post notices of a wage reduction and has maintained operations in its mills, the output barely exceeded two-thirds of capacity and some reports in that city stated that fully 2,000 looms out of the 6,000 looms in the plant were idle because of lack of business on a basis of profit.

The demand for fine goods has been improving somewhat in the past few weeks but it is still below normal for this period of the year. The converters and printers who are in need of goods have been able thus far to fill their requirements from mills outside of the city and consirable business has been taken by the few combed yarn and fancy weaving mills in the South. It is the belief of the manufacturers that there will be no really urgent demand for fine goods before November and if the strike were ended at once the surplus machinery available would result in harder competition and lower prices.

No official statement has been forthcoming from Fall River where it is understood that efforts are being made to merge and reorganize some of the plants there. More than half the machinery in that city is idle. Bids made for the stock of the King Philip Mills on a basis of $175 a share have not been finally acted upon. Reports are current that several mills in the city will be liquidated by their own stockholders rather than be merged on the basis suggested by some of those who are making appraisals and examinations of the plants for the purpose of reorganization.

In that city both the Algonquin and American Printing Companies continue to operate in full. It was announced there that the new tax rate for the year would be in excess of $40 per thousand or $12 higher than two years ago. Owing to the great reduction in mill valuations due to the idlnesss of many plants the burden of taxation has been thrown upon other properties and is being felt very severely.

In Maine nothing has yet been decided upon concerning the disposition of the York Manufacturing Co., where a small working force is engaged in running out the goods in process. The Lowell plants of the Pepperell Manufacturing Co. that bought the Massachusetts Mill there have been transferred to Biddeford, Maine, and part of the machinery will be used for the production of fancy blankets and fancy napped materials. The Biddeford plant of the company is running on short time and barely two-thirds capacity, the best business being done on sheets and pillow cases, some fancy napped goods and colored sheets.

In Lewiston the Bates Manufacturing Co. are quite busy on bedspreads and specialties in colored rayon and cotton materials. The Continental Mills have been securing more business and the Lewiston Bleachery is moderately active. The Androscoggin Mills are running about 60 per cent and are increasing their output. The Edwards Manufacturing Co. is doing a fair volume of business on many new goods.

Fancy Goods in Better Demand.

In New Hampshire the Amoskeag is operating to about 60 per cent capacity on a wide variety of cotton goods, the gingham output being small. In Nashua, N. H. the plants of the Nashua Manufacturing Co. are running on a curtained schedule. Connecticut mills making many rayon specialties and fine cotton goods are quite busy and have been securing many orders during the past four weeks. In Rhode Island specialty mills are doing quite well and the mills of the Lonsdale Co. and B. B. & R. Knight are operating more than 75 per cent capacity.

Finishing plants are averaging about 55 per cent capacity in New England as a whole. The printers are quite active in the whole field. The North Adams Print Works, Windsor Print Works, in western Massachusetts are running to capacity. The Pawtucket and Silver Springs branches of the U. S. Finishing Co., and the Connecticut plant of the same company in Sterling and Norwich, are handling a great many varieties of rayon and other synthetic yarn products. The volume of business on white goods and dyed goods is below normal and there is nothing in sight leading finishers to think that anything more than a moderate amount of business will be received before the end of the year. Competition among the finishers is quite as sharp as it is among the mills making fabrics.

The Pacific Mills at Lawrence are operating their large printing plant quite fully but the bleaching department is not so active. E. F. Greene, the treasurer, has retired from the management of the company and has been succeeded by Assistant Treasurer Colby. Beginning at the end of the year the relations between Lawrence & Co., the selling agents, and the Pacific Mills will terminate and the mills will sell their own goods and finance the sales.

The new wash goods season for Spring 1929 has gotten under way and printed goods form a very large part of the new offerings, the foundation cloths varying from common print cloths to the choicest of grades of calanese. It is believed that the season will prove to be a good one on cotton goods.

Top Rolls
Spindles
Comb Boxes

Special Parts Demand *Special Lubricants*

This applies to the Textile Industry more than to any other industry.

You cannot disregard this important fact. You cannot hope by trial and error to have "general" or "substitute" lubricants do the work as well as TEXACO special Lubicants. Oils not suited are bound to retard the operating efficiency of the parts lubricated, increase the cost for power, and what is most undesirable, increase the percentage of "oil spots" and "seconds."

The Texas Company's Lubrication Specialists have spent years of study —in our own laboratories and in cooperation with machinery designers and builders—to determine lubricating requirements for every type of machine or machine part in the Textile Industry.

These experts have found (as you have found) that the special conditions applying in the Textile Industry demand special lubricants.

So, when you ask *us* for a lubricant for comb boxes, for example, The Texas Company does not expect you to "try" different kinds; but we give you the finest product possible for comb box lubrication — TEXACO STAR GREASE A.

For top rolls, we do the same—we give you a special lubricant for top rolls—TEXACO STAR GREASE B.

For spindles—TEXACO SPINDLE OIL and so on. Always a *special lubricant* which the special condition demands.

This is sensible—it is right.

Try any of these special TEXACO Textile Lubricants once and you will learn why so many Textile Mills are thoroughly in accord with our policy of

Special TEXTILE LUBRICANTS
for
Special TEXTILE CONDITIONS

Adequate delivery facilities and ample stocks assure prompt delivery anywhere.

TEXACO TEXTILE LUBRICANTS

THE TEXAS COMPANY

Texaco Petroleum Products

Dept. CX, 17 Battery Place, New York City

OFFICES IN PRINCIPAL CITIES

COTTON COMMENT

By H. & B. Beer--

New Orleans, September 15th. 1928

FOR the first time since the fall of 1926, the bumper crop year, the cotton market appears to be in a position to warrant an accumulation of stocks of raw cotton by the spinner, a replenishing of stocks of cotton goods by the retail merchant, and the buying of contracts by the speculative inclined and by the conservative investor.

Compared with one month ago values are about $12.50 per bale lower, most of which decline occurred during the past week when a recession of about $9.00 per bale was recorded, due to the government raising its September 8th cotton crop forecast to 14,439,000 bales versus 14,291,000 indicated the previous month, a paltry increase of 148,000 bales, to hedge selling and the belief in some quarters that the crop is underestimated, on which theory, especially in Europe, lower prices are talked of as being probable.

While propaganda as to the probability of lower prices is being spread far and near, some large interests are apparently quietly buying very extensively of new crop cotton in the interior, particularly in Texas. During the past week sales of spot cotton at the quoted southern markets amounted to the large total of 282,000 bales compared with 237,000 for the corresponding week of last year when the available supply was much larger at that time than it is now.

There is a reason for this big demand. In fact there are more reasons than one. The price is about $20 per bale lower than at this time last year, middling in New Orleans to-day 16.91, last year 20.97. Compared with the average price of last season, which was 19.72 for the belt, present values are about $14.00 per bale cheaper. The very lowest price of middling in New Orleans last season was 16.41 or only one-half cent lower than it is today.

Another reason is that mill stocks throughout the world are light, as is the world's visible supply of American. At the close of August American mill stocks were 782,000 bales, last year 1,121,000. Foreign port, mill stocks and afloat for Europe at the close of July were only 2,591,000 bales of American, last year 3,461,000. Yesterday the world's visible supply of American was 2,183,000 bales, last year 3,680,000.

Other explanations as to the big demand for raw cotton in the South are that the world is at peace, assuring expansion of international trade, that the world's consumption of American cotton last season, exclusive of linters, and under restrictions of much mill curtailment in Japan and the United States, was, according to Secretary Hester, 14,896,000 bales, whereas the present indicated crop is only 14,439,000 bales. Season before last the world consumed 16,315,000 bales of American cotton exclusive of linters. It is not surprising, therefore, to witness the large purchase of spots in the South, as are now being made day after day at what may eventually prove to be bargain prices.

STATUS OF THE PROSPECTIVE SUPPLY SITUATION, LINTERS, ETC., NOT INCLUDED.

American cotton—Bales—	This season	Last season
World's carry-over, August 1st	5,078,000	7,012,000
Indicated crop	14,439,000	12,955,000
Season's indicated supply	19,517,000	19,967,000
Middling, New Orleans, today	16.91	20.97
Average price of middling, belt, for season	(?)	19.72

CENSUS REPORT

United States—Bales—	This season	Last season
Consumption of lint, August	526,729	634,520
Consumption linters, August	68,165	76,216
Consumption including linters, August	594,894	710,736
Mill stocks, August 31st	782,068	1,120,784
Stocks in public storage, August 31st	1,188,861	2,172,945
Stocks in mills and public storage, August 31st	1,970,929	3,293,729
Active spindles during August	28,243,508	32,292,404

Fundamentals of the situation, therefore appear sound and would become stronger if, instead of the crop being underestimated, as some people are prone to believe, it was discovered that the yield is being overestimated. In the past, or since the advent of the boll weevil east of the Mississippi, the custom has been to overestimate the crop in a wet season, such as this year was in the eastern belt, and to underestimate the production in dry seasons.

While consumption of lint in the United States during August was much less than for August last year, it was much larger than the 439,000 consumed during July of this year, denoting a revival of mill activity. Last season consumption was large in first half of the season, small in the last half. The reverse is apt to be the case this season.

Speculation, as has been the case during the past couple of years, is rampant in the New York Stock Market, but values there have been bulled to dizzy heights, probably overdone, and it is likely that the shrewd speculative observers will soon be looking for pastures new. In our humble opinion there is no field promising more possible profitable results on the constructive side than the opportunity now presented in the cotton market.

Mill Equipment in United States

THE following figures showing the cards, spindles, and looms in each of the United States, are taken from the current edition of Davison's Textile Blue Book, with which is consolidated Dockham's American Report and Directory. They are reprinted in the thought that they will be of interest to many readers by giving, in condensed form, the facts involved concerning each state. No account is taken in this table of the amount of equipment idle or in mills closed down, the figures representing the total physical equipment. For example, the Department of Commerce report as of June 30, 1928, shows that there were active during June in Massachusetts only 4,823,426 spinning spindles.

COTTON MILL MACHINERY
in the United States, July 1, 1928

States	Cards	Ring Spindles	Twister Spindles	Broad and Narrow Looms
Alabama	3,875	1,449,767	79,376	24,555
Ark.	98	37,800	4,416	365
Calif.	309	50,656	17,886	701
Conn.	1,802	678,360	53,368	23,623
Del.	....	....	....	20
Georgia	10,027	3,229,100	331,224	62,049
Illinois	80	38,176	120	860
Indiana	238	84,496	....	2,162
Iowa	4	....	....	20
Kentucky	396	86,664	5,248	1,494
La.	425	101,244	600	1,465
Maine	1,358	1,121,588	31,560	27,794
Md.	129	68,528	3,264	943
Mass.	11,999	8,393,156	360,082	196,983
Mich.	3	84	16	346
Miss.	519	178,560	3,000	5,037
Missouri	144	29,000	1,100	580
N. Hamp.	2,320	1,399,338	11,540	37,863
N. Jersey	356	244,084	21,920	3,655
N. York	808	639,556	27,708	11,475
N. Caro.	16,267	6,188,073	733,071	88,051
Ohio	269	12,360	5,784	352
Okla.	103	30,912	2,000	558
Penna.	471	146,876	35,093	16,085
Rhode Is.	3,921	1,980,308	92,562	51,280
S. Caro.	11,329	5,422,969	139,714	128,109
Tenn.	1,444	578,664	35,558	8,607
Texas	1,012	281,366	16,448	5,709
Vermont	195	135,048	....	3,355
Virginia	1,752	692,260	9,230	19,138
Wisc.	74	....	....	197
Total	71,727	33,298,993	2,021,888	723,411
Total Idle Mchy.	1,903	850,368	55,892	15,355
Mills under Construction	....	107,500	....	3,150
	73,630	34,256,861	2,077,780	741,916

Machinery in mills to be completed by July 1st is included in the regular figures.

Was your HUMIDIFYING SYSTEM *installed when bicycles were built for two?*

THE humidifying equipments in textile mills in vogue 15 to 30 years ago can't compete with the efficient systems of today. Even the complicated automatic control devices of more recent years are now giving place to the new Amco Humidity Control, because it's simpler, more responsive and far more reliable.

Yet this modern control costs no more, often less, than the complicated devices which depend on wet and dry bulb elements for maintaining proper humidity conditions.

A special animal membrane, extremely sensitive to changes in humidity but unaffected by temperature is the actuating element in this unique control which is revolutionizing humidifying conditions in scores of mills. This animal membrane is responsible for the simplicity of the new Amco Control and its reliability was proved in 100,000 tests before final adoption.

Some 2,000 of these dependable Amco Controls are now in actual mill service from Maine to Mississippi. For many months they have been maintaining relative humidities within a range of 2% without a single complaint or failure.

To get full benefit from your humidifying system you need a trouble-proof control. Try Amco! It is so good and we are so confident it will better conditions in your mill that we will install one on 30 days' free trial!

This newly designed Amco Humidity Control automatically regulates and controls humidity in Textile and other mills without using wet or dry bulb actuated devices.

YOU ARE INVITED to visit our exhibit, Booth No. 126, Southern Textile Exposition, Greenville, S. C. Oct. 15 to 20, 1928.

AMERICAN MOISTENING CO.

Humidifying Devices

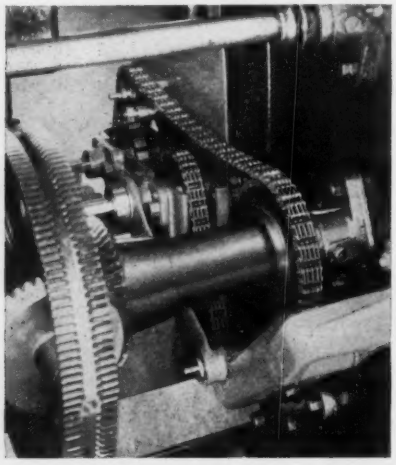
Air Doctors Since 1888

EXECUTIVE OFFICES
261 West Exchange Street,
Providence, R. I.

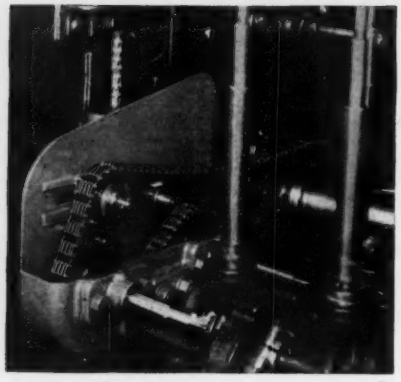
SALES OFFICES
Boston, Mass. Atlanta, Ga.
Charlotte, N. C. Greenville, S. C.

Constant Motion Chain Drive for Roving Frames

A new constant motion chain drive for roving frames has been developed by the Saco-Lowell Shops, 147 Milk Street, Boston, Mass. It is stated that this drive is so designed as to eliminate the swinging link motion for driving the back bobbin shaft gear from the sleeve gear of the compound. This link motion and the gears is often referred to in shop and mill parlance as the "horsehead." It is pointed out that this swinging link motion is not entirely satisfactory, as it affects the tension of the roving, and causes the ends to slacken when the rail is running



Rear View of Chain Drive.



Front View of Chain Drive.

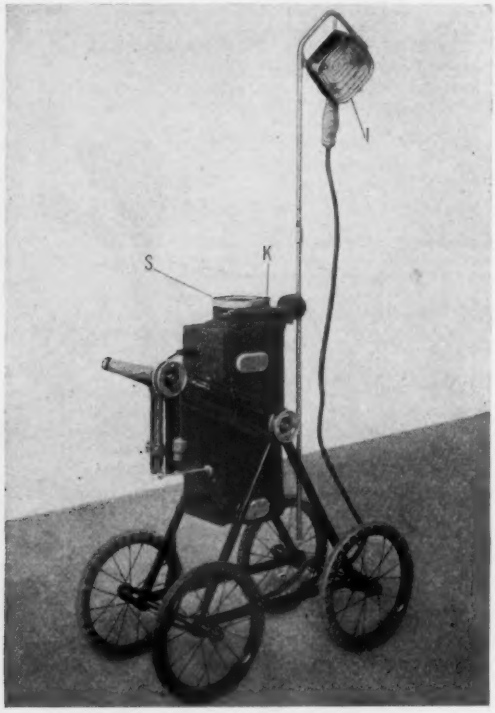
down, and to tighten on the up stroke of the traverse. The unevenness of the winding is caused by the driven gear carried by the swing arms rolling over the bobbin gear.

In the Saco-Lowell constant motion chain drive only one chain is used, and this chain drives from the main shaft over a compensating or jockey gear, and connects the two bobbin shafts (front and back bobbin shafts). The company states that by using this system of driving the variation in tension is overcome. The equipment is arranged with a device on the lower side of the chain which acts to keep the chain uniformly taut at all positions of the traverse of the bolster rail. There are no spur gears in the bobbin drive on the main shaft or on the back and front bobbin shafts or between them.

An Instrument for Machine Observation

AN interesting machine known as the Stroborama, involving the stroboscopic principle, is being marketed in this country by Musa-Hartzell-Ducasse, Inc., 25 West 43rd St., New York City, and has been demonstrated in a number of southern mills. One of the chief cotton mill uses of the instrument, which is shown in the accompanying illustration, is for determining the mechanical condition of spinning and twisting frames, and other machinery, by observing each spindle in the light of the instrument.

The Stroborama works without contact with the machinery in operation. An aluminum casing, supported by a narrow carriage mounted on rubber-tired wheels, encloses a variable speed electric motor driving a high tension

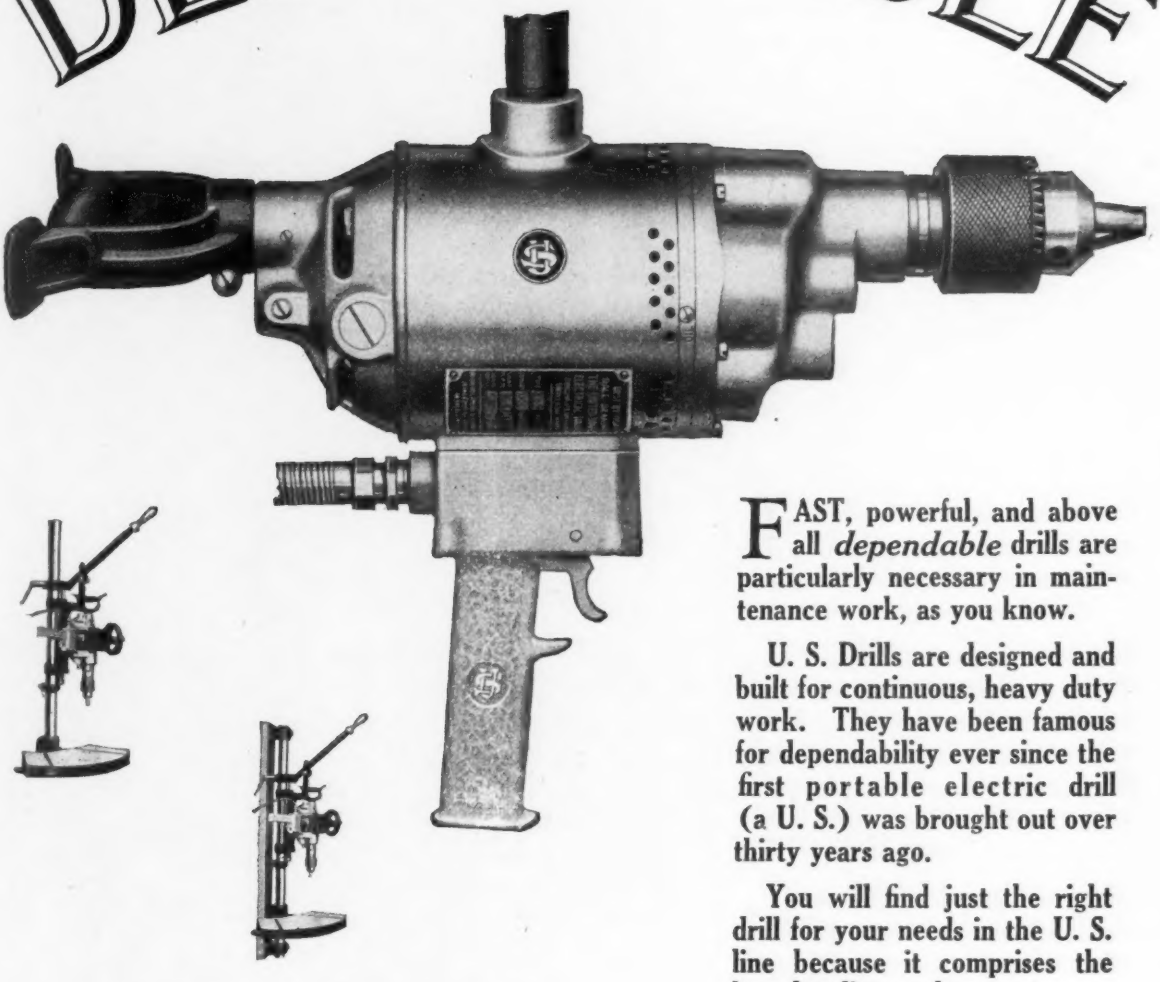


generator. The high tension current discharges in a "Neon" tube projector *I*, illuminating the spindle being observed by a series of quick light flashes. When the flashes occur every time a bobbin is in the same position at each revolution, this bobbin appears to be at a standstill. Fast spindles appear to turn slowly forward and slow spindles to turn slowly backward. By means of the knob *K*, the speed of the instrument is quickly adjusted, remaining constant for the setting effected. The speed counter *S* indicates the number of light flashes per minute, which is the same as the number of revolutions per minute of a spindle appearing at a standstill. The distributors point out that the instrument enables the operator to detect the operation of mechanical elements quickly, and to effect suitable adjustments and repairs.

MOSSBERG DEVELOPS NEW DROP WIRE

The Mossberg Pressed Steel Corp., Attleboro, Mass., announce the manufacture of a new process drop wire, it is recommended by the makers for use in weaving both silk and rayon as well as cotton goods. It is claimed by the makers that it will not chafe the finest silk or rayon yarns.

DEPENDABLE



U. S. 5/8-inch Drill
400 R. P. M. Under Load
$78

FAST, powerful, and above all *dependable* drills are particularly necessary in maintenance work, as you know.

U. S. Drills are designed and built for continuous, heavy duty work. They have been famous for dependability ever since the first portable electric drill (a U. S.) was brought out over thirty years ago.

You will find just the right drill for your needs in the U. S. line because it comprises the broadest line made.

"Ask the Jobber Salesman"

The UNITED STATES ELECTRICAL TOOL COMPANY
2474 W. SIXTH ST. CINCINNATI, U.S.A.

Oldest Builders of Electric Drills and Grinders in the World

THE STANDARD OF QUALITY SINCE 1897

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Westinghouse Electric International Co.
150 Broadway, New York City

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

JOHN A. BAUGH, JR., who for several years has been agent of the New England Southern Mills, operating divisions at La-Grange and Hogansville, Ga., and the Stark Mills, at Hogansville, has become resident agent of the Loray Mill of Manville-Jenckes Co., at Gastonia, N. C. In this position he succeeds Gordon A. Johnstone, who recently resigned as agent of the Manville-Jenckes Company plants at Gastonia, and High Shoals, N. C.

WALKER D. HINES, president of the Cotton-Textile Institute, Inc., has been awarded the Cross of Grand Officer of the Czechoslovaki Order of the White Lion by President Masaryk, of Czechoslovakia, in recognition of the "eminent services" given by Mr. Hines as an arbiter of international disputes in Europe following the war.

G. T. KING, superintendent of power at the Lancaster Cotton Mill, Lancaster, S. C., has been elected chairman of the master mechanics division of the Southern Textile Association, succeeding H. H. Iler.

JOHN T. WIGINTON, who for three years was connected with the Bureau of Agricultural Economics, Department of Commerce, at Clemson College, Clemson, S. C., has taken a position in charge of research for the Textile Manufacturers Association with offices at Room 1906, 205 West Wacker Drive, Chicago, Ill.

D. P. CAREY, recently of Duluth, Minn., has been elected president of the Durham Hosiery Mills, Durham, N. C.

HAROLD W. DAVIE has resigned as sales manager of the Durham Hosiery Mills, Durham, N. C., to enter business for himself.

JULIUS KATES has accepted the position of overseer of cloth room at the Alamance Novelty Company, Burlington, N. C.

T. J. FEENEY, who has been in the employ of the New England Southern Mills for the past fourteen years, has accepted a position as supervisor of carding and spinning at the Esmond Mills, Esmond, R. I.

W. L. MANNING, who for some time has been vice-president and general manager of the Rosemary Manufacturing Co., Rosemary, N. C., has been elected president of the company. He is a textile graduate of the North Carolina State College.

LAWRENCE W. BROWN has been transferred from the French Broad plant of the Martel Mills, Asheville, N. C., to the office of the Henrietta Mills, Cherokee Falls, S. C.

FRANK PITTMAN has been made assistant superintendent of the Autaugua Cotton Mills, Prattville, Ala.

E. C. GOODWIN, formerly overseer of carding and spinning at the Morgan Mill, Millen, Ga., is now night overseer of carding at the No. 1 Mill, Langley Mills, Langley, S. C.

A. C. REVELS has been transferred from the Shelbyville Mills, Shelbyville, Tenn., to the Columbia Cotton Mills, Columbia, Tenn.

BRACK DAVIS has been promoted to overseer of weaving at the Geneva Cotton Mills, Geneva, Ala.

J. W. Hogg is now overseer of spinning at the Enterprise Manufacturing Company, Augusta, Ga.

W. E. EVANS is now overseer of weaving at the Crawford Cotton Mills, Crawford, Ga.

J. T. JORDAN has resigned his position with the Bladenboro Mills, Bladenboro, N. C., to return to his former position as superintendent of the United Mills, Mortimer, N. C. Mr. Jordan succeeds F. L. Holland, who recently resigned.

G. W. WILLIAMS, formerly with the Slater Mills, Marietta, S. C., is now overseer of carding at the Judson Mills, Greenville, S. C.

D. W. LEAGUE has resigned as overseer of weaving at the F. W. Poe Manufacturing Company, Greenville, S. C. He is succeeded by T. C. Snipes.

A. B. MCCORMICK has resigned as the superintendent of the Yarbrough Mills, Durham, N. C., and accepted a similar position at the silk mill of A. Schottland, Inc., Rocky Mountain, N. C.

J. W. HURD, formerly assistant superintendent of the Apalache plant of Victor-Monaghan Company, Arlington, S. C., has become overseer of spinning at the Judson Mills, Greenville, S. C.

P. A. Redmond.

R. O. Roberts.

THE ALABAMA MILLS COMPANY, Birmingham, Ala., have announced the following appointments of superintendents for nine of the mill units which they are erecting at different points in Alabama.

Aliceville, Ala.—W. E. RAMBOW, until recently superintendent of Southern Brighton Mills, Shannon, Ga.
Winfield, Ala.—W. S. PORTER, who has been at Borden Mills, Kingsport, Tenn.
Haleyville, Ala.—S. L. BOLTON, recently with Dallas Textile Mills, Dallas, Texas.
Clanton, Ala.—A. B. MEEKS, for several years superintendent, Barrow County Cotton Mills, Lawrenceville, Ga.
Dadeville, Ala.—G. W. TURNIPSEED, until recently superintendent of Buck Creek Cotton Mills, Siluria, Ala.
Greenville, Ala.—W. B. KITCHENS, for several years superintendent of Montala Mfg. Co., Montgomery, Ala.
Russellville, Ala.—A. N. MARTIN.
Jasper, Ala.—LAWRENCE CARTLAND.
Fayette, Ala.—J. L. BRANNON.

Paul A. Redmond is executive vice-president; and Roscoe O. Roberts is general superintendent.

AT THE 1928 SOUTHERN TEXTILE EXPOSITION
IN GREENVILLE, S. C., OCTOBER 15 TO 20
WE WILL EXHIBIT AND DEMONSTRATE
AN AUTOMATIC SPOOLER AND A HIGH SPEED WARPER
IN THE SAME SPACE WE OCCUPIED AT THE LAST EXPOSITION

BARBER-COLMAN COMPANY
GENERAL OFFICES AND PLANT
ROCKFORD, ILL., U. S. A.
FRAMINGHAM, MASS. GREENVILLE, S. C.

Do These Bobbins Look Familiar?

THERE is more than one mill in the country that is using bobbins as bad as these. Good yarn cannot be made on poor bobbins.

U S Card Room Bobbins are guaranteed to a definite degree of uniformity. The same careful attention is given to selection of stock, finish, and spindle, bolster, and gear fits that makes U S products the choice of the majority of mills.

Why not look over your Card Room Bobbins today? Ask yourself if you are imposing a handicap on your carders, and replace some of those old bobbins with U S better bobbins.

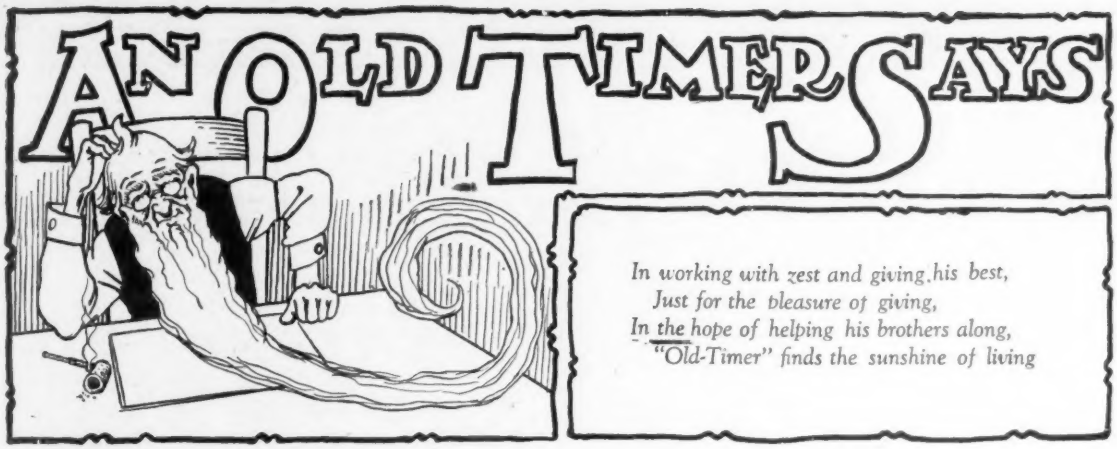
Write, wire, or 'phone our nearest U S service man to help you adopt standard sizes if you do not already have them.

U S BOBBIN & SHUTTLE CO.

PROVIDENCE, R. I.

GREENVILLE, S. C. HIGH POINT, N. C. PHILADELPHIA, PA. ATLANTA, GA.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

Last month, you recall, we left "Old-Timer" and Jim talking about keeping records of routine and regular duties to be executed. This month they are still talking, and Jim tells "Old-Timer" of an interesting method he uses for figuring the comparative life of the supplies he uses. They also talk of many other things of interest. The next section will find them talking about the multiple system, quill waste in the weave room, etc. *The Editor*

"HEY, JIM, I see you have that old sore-head back at work who came into your office about a year ago when I was here and proceeded to cuss out the whole works. Now, will you please explain to me just why you give a man like that a job again?"

"Well, Old-Timer, I'm to blame, of course, but the overseer asked me about ten times to let him hire the fellow back, saying that he claimed he saw his mistake; that he was loyal to us now."

"Yes, Jim, I know the old song—that is what they all say; but did you ever stop to think that those kind of things give you a chance to really find out what kind of overseer you have?"

"How's that, Old-Timer? I don't know that I exactly understand you."

Hiring Back the Old Hands

"Well, in all of my experience, Jim, I have always found that every mill has a certain percentage of disloyal operatives, and, strange to say, they oftentimes are some of the very best help you have. The other strange fact is that most overseers know pretty well who the disloyal operatives are, and of course as long as you have plenty of help and the work is running well, these people do not give much or any trouble, but when help gets short, and the seconds go up, and your production begins to drop off, and then on top of that here comes an order from the office to reduce pay ten per cent . . . Well, that is the time when your overseer who hires back all those old sore heads finds out that he has used bad judgment, and you find out you have been paying him a salary for doing so. You get sore at your overseer, he is already badly worried because the disloyal operatives are making life miserable for him, and the result is you begin to look for a better overseer, and he begins to look for another job."

"I hadn't thought about it that way, Old-Timer."

"Speaking of systems for your overseers, Jim, I think one of the best things a superintendent can do is to get all his men together every few months and take them all together through every department of the mill. Encourage the carder and spinner to ask questions about what they see in the weave room and cloth room, and vice versa with the weaver and cloth room overseer as to what they see in the carding and spinning. Take the slasher tenders out into the weave room and look over the warps. Take the doffers to the cloth room and look over the cloth which has thin places caused from bad piecing up. Take them to the loom and explain how a thin place is caused when the filling breaks, caused by bad piecing, and leaves a piece of filling hanging outside the shuttle to knock up the filling fork. Then when the overseer of spinning catches a doffer lapping his ends piecing up, that doffer knows what the overseer is talking about. . . ."

"Gosh, Jim, that's a gang of scrubbers you have there."

"Yes, I know, but they are doing the scrubbing for all the mill. I find it seems to give new life to change them around sometimes. When you were here before I had each scrubber working by herself on a certain section of floor space, but now I have them all together, but I may change them back again in six months. I do the same with my blow-off hands. I work them one to each alley awhile, then I give them so many looms each for several months."

"Nice box of top rolls, Jim. Looks like you have a pretty good roller coverer. Do you date your cots?"

Keeping Record of Supplies Used

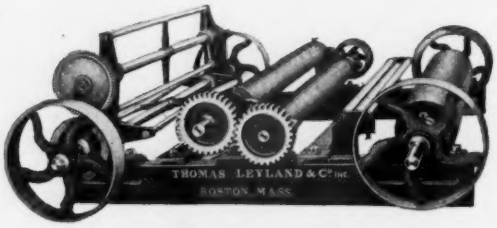
"Sure, we do, and we also have a monthly record of the number of rollers used by each department. Then we keep a record of the number of hours each department operates, so at the end of the year we multiply the spindles by the hours run, this gives us the spindle hours just like kilowatt hours or horsepower hours. We can then run the spindle hours into the rolls used, or dollars spent on travelers or belting or oils or anything, and we have an absolutely correct comparison with other years or months when the mill has curtailed or has not run as many hours from any cause. We have a book in which we keep a record

Vital— *to the textile manufacturer*

EFFICIENCY COUNTS—in the handling of cloth as it comes from the water or starch mangles, dry cans, calenders, mercerizing or dyeing machines. It often proves fatal to skimp this process.

Leyland Regulating Cloth Expanders are the efficiency devices of a pioneer manufacturer in this line. They are standard for getting maximum width on Cotton or Rayon piece goods.

Gentle action, ever so easy on delicate fabrics, immunity to the corrosive action of sulphide of sodium and other chemicals, are more reasons why leading mills have always used them.



Improved Free-Running SCUTCHERS

Thousands of hours of service each year. Continuous performance—under varying conditions and processes. These are the severe tests of endurance, dependability and life that our Improved Free-Running Scutchers undergo in the textile mill. And it is their ability to produce with practically no maintenance and enable mill managements to keep production schedules. This explains their extensive use.

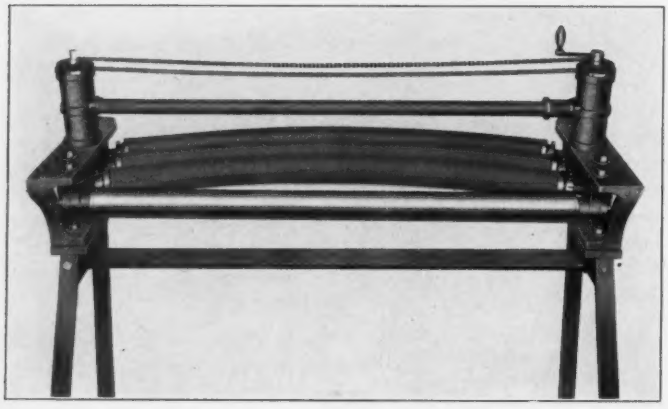
Patented scroll rolls, universal bearings, gear or belt drive. Can be furnished with single and double beaters or rollers. All working parts interchangeable.

THOMAS LEYLAND & COMPANY, Incorporated

F. T. WALSH, Vice-Pres. and Gen'l Mgr.

SOLE MANUFACTURERS

Office and Works: READVILLE STATION, Boston, 37, Massachusetts



RUBBER COVERED EXPANDER

The 3-Bar Rubber Covered Type Leyland Regulating Cloth Expander shown at left is the latest improvement, and shows the rubber covered bar regulating motion and adjustable bars.

Our RUBBER COVERED EXPANDERS give splendid results on all kinds of work in Bleacheries, Calico Print Works and Cotton Piece Dye Works, and more particularly with silk, rayon, and fine cotton goods, giving superior finishes.

The 5-Bar Type is used for obtaining extra widths and for greater efficiency on all classes of goods, securing the greatest uniformity with the least tension.

REGULATING CLOTH EXPANDER

of all check straps the weave room use, also a separate account for picker sticks and any other special supplies on which we wish to know exactly what we are doing. Our shuttle record is of course kept in a separate book which has the number of each loom in it, and every shuttle is charged to the loom that gets it. This of course lets the overseer see which looms are using too many shuttles. Then we report each week the hours run and looms run, and at the end of the year we multiply the total looms run by the total hours run, which gives the loom hours. This gives us a figure we can run into dollars paid out for check straps or pickers or shuttles, or into the number of check straps, pickers or shuttles, to see what the life of each is. You of course understand you can easily convert this figure back into months or years, if you want to know the months or years a check strap or shuttle or picker stick is lasting."

"For example, in a weave room of 1,000 looms, say that the hours run for the year total 2,800, and that 850 shuttles were used. 1,000 looms × 2,800 hours = 2,800,000 loom hours. Then 2,800,000 ÷ 850 = 3294 loom hours per shuttle.

"In a full year there are 52 weeks of 55 hours each, or 2860 hours. If you wish to express the life of your shuttles in years, proceed as follows: 3,294 loom hours per shuttle ÷ 2,860 hours per year = 1.15 years.

"Or, if you wish you express the life of your shuttles in months, there are 55 hours per week and 4 1/3 weeks per month, or 238 hours per month. 3,294 loom hours per shuttle ÷ 55 × 4 1/3 = 13.8 months, life of shuttle.

"If you will keep an accurate record of the looms you run each week, and the hours you run each week, you can build up a record of cost of all supplies based on loom hours run, and you will have the only fair way of arriving at a comparison from year to year.

Figuring the Life of Supplies

"It is sometimes confusing to get up an accurate report at the end of each year or month when your hours run have varied, and your looms run per day have varied. Probably you have run the day looms full during the month or year, but have operated 250 at night for one night or 50 nights; then operated 375 for several nights. This of course makes it a little puzzling to get up the average looms run for the year, but if you will merely take day looms and multiply by day hours, and night looms and multiply by night hours, then add the day and night hours together, you will certainly have the total loom hours run for the period.

"Then you can base all calculations for supplies, expressed in either dollars or quantity of supplies, and you will have a figure which you can compare with other periods. For example:

"We'll say a weave room of 1.000 looms used 326 pounds of check straps (3½ straps to the pound) or 1141 straps, which cost $505.02. The total loom hours, day shift, were 2,800,000, and the total loom hours, night shift, were 305.760, making a grand total of 3,105,760 loom hours.

"Now, suppose you wish to ascertain the life of a check strap. Proceed as follows: 3,105,760 loom hours ÷ 1,141 straps used = 2,721 loom hours per strap. This is really the figure you should use for a comparison each year, but most overseers and superintendents wish to express the life of supplies in months or years, so you can get at it in this way: 55 hours × 4 1/3 weeks = 238+ hours per month. Then, 2,721 loom hours per strap ÷ 238 hours per month = 11+ months, life of strap.

"As you probably wish to know whether it pays to buy $2.00 per pound check straps, or $1.50 per pound straps, you should determine the cost of a loom hour for check straps, or a check strap hour, then you will know what you are talking about, and not what you or some of your men *think*. Here is the way to do it: $505.02 cost of straps ÷ 3,105,760 loom hours = .00016 cents per loom hour for check straps.

"Now, you can do your picker sticks the same way, and you will soon find out it will pay you to buy the very best picker sticks you can find. Keep a record of pickers, harness and reeds, or any other supplies the same way, and in a few years you will have a valuable record and you will also be able to get up at these textile meetings and tell the boys that you *know* about shuttles, check straps or anything else."

"Thanks, Jim, that's good dope. What is that section man doing to those lifting rods, Jim? Oiling them?"

"Do you know any more good jokes, Old-Timer?"

"Well, darn it, look at that filling traverse dwell when it goes to change. How's that for a good joke? I guess you tell the cloth room man it's just a joke when he shows you a bunch of cloth full of ropy filling, do you?"

Jim wants a New Traverse Motion

"Now, I didn't mean to step on your toes about the lifting rods, Old-Timer, so don't get huffy, and I will get those traverse motions fixed so quickly it will make your head swim. Why in heck doesn't someone get up a better traverse motion for a spinning frame, anyway?"

"Now, Jim, if all the machinery was built so well that it needed no attention, and all the help worked like they would if the machinery belonged to them, do you realize that you and I wouldn't have any job?"

"Guess that's a fact, too, but I sure do get out of heart sometimes when I just tell a man and keep on telling him about doing certain things, then just as soon as I turn my back he has drifted away from the very system that he agreed was a good thing."

"There you explain very clearly again why there is such a demand for men, Jim, and that also brings out the argument I was putting up to you as to why so many men remain overseers when they are capable of promotion."

[At this point "Old-Timer" and Jim reached the card room, and in that department Jim sort of shows "Old-Timer" up. They talk about card room waste, and then wind up in the weave room before they are through. This will appear in the next installment of "Old-Timer's" report of his visit with Jim.

We are endeavoring to persuade "Old-Timer" to visit the Southern Textile Exposition in Greenville, and tell us about some of the things he sees there, in the November issue. We can't promise this definitely, but it should be worth reading if we can get him to do it. In any case, his report of his visit with Jim will be continued in either November (if he doesn't go to the show) or December (if he does).—The Editor.]

G. E. ENLARGES PRODUCTION OF TEXTOLITE PICKERS

The General Electric Co., Schenectady, N. Y., announce that the report that they have stopped manufacturing Textolite pickers is untrue. On the other hand, it is stated that General Electric is planning to more than double the output of these pickers to meet the present demand.

Some Additional Answers to "Old-Timer's" Questions

"Making that Hard Weave Run Good!"

EDITOR COTTON:

In response to "Old Timer's" request, I wish to tell how we "made that hard weave run good".

To begin with, the management gave us good cotton. Then we tried to make the work run good and produce quality and quantity. In our picker room we try to make even running laps allowing one-half pound variation in weight. In other words, if the standard weight is 35 pounds for each lap, we do not run laps that weigh 36 nor 34 pounds.

At the cards we see that the card hand does a good job in laying down a new lap. At intervals we weigh the card sliver before, at the time of, and fifteen minutes after laying down new laps. This is done in order to check up on the card hand. We believe that most of the uneven work on cards is made by careless piecing of the laps. We keep our grinding equipment in good order by sending it back to the factory once a year to be overhauled.

Our overseer and assistant overseer are required to check up on the work of the card grinders to see that they are setting according to instructions. The card grinder is required to get the overseer or assistant overseer before he starts up the card after grinding. The overseer takes the card gauges and goes over all the settings. The overseer does not look at every card in this manner, but we think it a good rule for the grinder to get the overseer or tell him that he has a card ready to start. Then if the overseer is busy at something else, he can give his permission to go ahead and start up the card.

Our draw frame hands are not allowed to stand ten or twelve feet behind the frame and throw the end of the sliver at the rolls, nor in any other hit-or-miss style of piecing up ends. We require the hand to take the end of the sliver in their hand up to the rolls and make a good even piece-up.

We watch the tension on our fly frames closely in order to prevent tension-stretched roving. We have a place painted on our fly frame cones and see that each time the frame is doffed that the cone belt starts at this point. Our frame hands are not permitted to wind back racks or change tension gears.

Our method of checking up on fly frame tensions is to go to the spinning set in one side of a frame with full roving; the other side of the frame with one-fourth full roving; keeping a record of all the ends that break or come down on each side of the frame, and naming the causes of the end breakage. Also taking weighings from each side of the frame, in order to check up on the variations in yarn number.

Our overseers of spinning go through each alley, at frequent intervals, looking for things that make bad, uneven work, such as: vibrating steel rolls, vibrating top rolls, vibrating spindles for lack of oil, bad scavenger rolls, bad and worn out bobbins, weight levers resting on creel boards, and poor cleaning.

Our spooler guides are set to 12/1000th-inch for the yarn to pass through, in order to catch gouts and slugs. Our section man on spoolers goes over a certain number of spooler guides every day and gets over the entire room once in 30 days. We keep a close watch on our spooler hands, in regards to making kinks, long knots, and lapped ends, and check on the spooler help in the following manner: Take the necessary amount of one spooler hand's spools and tie the spools in on one warper. When the warper is started up, put a section man at the front of the warper, with a card with all defects listed thereon, each time a defect comes up on the warper, the section man marks the card, until the spools run empty. Then the section man takes the card and shows it to the spooler hand who made the spools.

We have a small tin flag, painted red, on the end of each warper. When a creel hand starts up a warper after creeling, she raises this flag, which is a signal for the second hand or section man to go look this warper over, to see that the measuring clock is set properly and accurately, and to look the selvage over, to see that they are not one-sided, too high or too low. Then the section man or second hand lowers the flag, which indicates that the warper has had attention.

On the slashers, beginning with the size, we run a certain amount of cold water in the size kettle. Then we add the amount of starch desired, stir the water and starch for thirty minutes; then add the compound and tallow, turn in the steam, letting it take 20 to 30 minutes to come to a boil. Cook 1 to 1 1/4 hours for fine sheeting.

Slashers should be equipped with automatic size box and automatic cylinder steam controls in order to give the desired amount of steam in the size box and on the cylinders that will produce the best results. We keep a temperature of 190 degrees in our size box, and from three to six pounds of steam pressure on our drying cylinders. We keep the section beams lined up and the bearings adjusted on the back of the slashers. We run the yarn over our cylinders as slack as it will run without sagging in order to keep the elasticity in the yarn while the yarn is being dried, we keep good blankets on our squeeze rolls with a good cushion. We check up on the added breaking strength and percentage of size put on the yarn, by reeling off 120 yards of the unsized warp yarn weighing and breaking the unsized yarn. Then we take the same four bobbins of the unsized yarn, set them up at the back of the slasher and run the yarn through the size box, reeling the yarn off at the front of the slasher as the unsized yarn was reeled and weighed. We deduct the result of the unsized yarn figures from the sized yarn figures, this will give the added amount of weight and strength added by the sizing.

We test the running qualities of warps by placing ten warps on ten looms, or in case we want to run a test on more than one thing, we place ten warps of each kind on ten looms. Then we put an experienced hand on to make the tests. This hand has a card written up with all the defects listed thereon. These cards are marked up in tally form for each defect until the test has run for 40 to 60 hours. Then these cards are taken up and a summary is made of each kind of defect and we can tell what defect causes the most loom stops.

M.C. (S.C.)

Is Annual Plumbing of Spindles Necessary?

EDITOR COTTON:

I have read "Old Timer's" suggestion, in the June issue of COTTON, that the readers give their methods of doing different things in the mill. After reading several articles on the subject of plumbing spindles in COTTON, I would like to give my views on this subject.

First, I do not think it at all necessary to plumb spindles once a year, as is advocated by some writers on this subject. My experience teaches me that plumbing spindles once a year would be entirely out of line with the program of economy which all mills are forced to practice. The cost of overhauling spinning is great, both in dollars and cents and loss of production.

When the time comes for overhauling our spinning, we should first make sure that we have competent men and then see that the work is done right. We all agree that a thing is not right until it is *all* right.

The frame should first be lined and leveled, both lengthwise and crosswise. The ring rails should be removed from the frame and thoroughly cleaned; every ring should be carefully examined to see that it is correctly seated as sometimes dirt or lint gets under one side of the ring. We must not plumb a spindle to a ring that is not level due to the foreign matter holding up one side, because the section man will later find the trouble and correct it; then the spindle is out of plumb. By going over the rails in this manner we can remove much vibration by replacing worn bolsters and spindles with new ones. When we put the ring rail back we should be very careful to get it level. Pull the ring rail down to the bottom on the change and set all spindles in the center of the ring. Then run the ring rail up to a position where the top of the spindles are even with the top of the ring. The spindles are then ready to plumb by putting pieces of paper under the close side. The rail should then be run back to the bottom to see how they are; any spindles found out of line should be marked, then gone over until they are in line.

Every base should be lined along with the rail and every base nut should be tightened. Thread guides should be accurately set, then tightened.

When a spindle plumber reports that he is through with a frame, it should be inspected closely by the overseer or second hand. I think that we are all more careful when we think that our work is going to be checked.

My experience is that if we keep good properly trained section men, men who can and will plumb a spindle when necessary, our spinning will go longer than twelve months without having the spindles plumbed.

It has been nine years since I have had my spindles plumbed and I wish to say that I have a room full of contented help who run from eight to fourteen sides on 16s to 22s yarn and are not overworked. My spinners do their own cleaning.

I think that I am a fairly successful spinner, but constructive criticism is always welcome.

A.G. (GA.)

INTERESTING BOOKLET ON COOPER HEWITT WORK LIGHTS

The Cooper Hewitt Electric Company, 95 River Street, Hoboken, N. J., has recently published a very interesting illustrated booklet on industrial lighting, entitled "What Non-Friction Bearings Did for Machinery, Cooper-Hewitt Has Done for Production."

Spinning Discussion at Lake Lure Meeting

(*Continued from page* 1241.)

weight on the middle roll," said Mr. Penland. "My experience is the least you can have without the roving rolling double between the middle and back rolls, the better it is. Usually we don't use any on fine counts; you can get a lot of trouble if there is too much."

"Do you need a greater break draft on long draft spinning, Mr. Franks?" Mr. Dilling asked.

Mr. Franks replied that with the long draft, he found it necessary to increase the break draft from 1.09 to 1.23 in order to keep the roving straight. He said when he went to the long draft he put in the light roll. The heavier roll, he said, would hold it to the right place, but when there is nothing to carry it it would want to knuckle around.

Mr. Scott asked how many use the case-hardened Pitman roll on spinning frames, and also the roller bearing there. "I changed to the ball-bearing case-hardened roll about six months ago," said Mr. Penland, "and it seems I do not have any lost motion in the traverse, and they do not choke up." Mr. Carpenter said he changed to it about six months ago and hasn't noticed a choke-up since. There came here a brief discussion as to oiling the cams, and it was conceded that even if the cams are left dry, they will get some oil on them.

"Has anybody changed from round-point to square-point travelers on 70s and finer?" asked Mr. Waldrop, who continued, "I have tried it on a few frames. I have always been a round-point man, but if I could get the right kind of square-point it would eliminate trouble in more than one way, especially in knocking down other ends when one goes out. The round-point will wear out quicker, and it will tear down more ends." The chairman asked Mr. Johnson for his opinion, and he said, "I changed *from* square to round point. I think this also depends on the opinion of the man who is trying it."

Reverting to the discussion on middle rolls, Mr. Dilling said it seemed to be a tendency to use a light unweighted middle roll on the finer numbers, with the roving controlled but not over-weighted. Walter L. Davis said he had used the Washburn wooden rolls on 8s, 10s, and 12s, and that at first it was too heavy, but later adjustments had corrected the trouble; and that he finds it doesn't make much difference in breaking strength, on these numbers. In connection with the speed of the traverse, Mr. Davis continued,

"We are going up fast and down slow. I notice in the past few years that some builders have put out a composite cam that delivers a different stroke, making a longer stroke one time than another. When using this with filling wind warp, where the yarn has to be run over the end of a package at the warper, it doesn't slough off nearly so badly. It takes a much longer taper on the ordinary cam than with the composite cam." Mr. Holland said he had run this cam putting yarn on pasteboard cops, and "you could hardly knock the yarn off".

"That winds it on at different speeds," added Mr. Dilling, "and makes a difference in the stroke." Mr. Scott said the bobbin-former he had referred to during the morning session uses the composite cam.

This virtually concluded the afternoon session, and the meeting was adjourned.

NOW, Not at the End of the Fiscal Year

Big business, operating on close margins, has found it unsafe to wait until the end of the fiscal year to take inventory, determine profit and loss, and complete the balance sheet.

Big business has proved, both for itself and smaller business, the absolute necessity of *knowing*, exactly, NOW, daily, or at least once a month, the extent of profits and progress.

The current trend of sales and production, used as an indication of what to expect at the end of the fiscal year, is, "generally speaking," "fairly accurate." But "generally speaking" is not accurate enough.

The only safe and constant basis for executive decisions is *timely and exact knowledge* — knowledge best derived from the frequent comparison of operating results with a well-planned budget.

"NOW, not at the end of the fiscal year" means the prompt correction of mistakes, elimination of loss, and *protection* of profits.

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all varieties of Mill Subjects

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Wants Filling Waste Figures on Belting Duck.

EDITOR COTTON:

I would like to secure some information as to the experience of other mills with reference to the amount of filling waste per loom allowed on 28-ounce, 32-ounce and 36-ounce belting duck. In this connection we would also like to know the number of hours the loom is run on which this allowance is made.

Also, we would be interested to find out different methods of controlling this filling waste in different mills. That is, do they just weigh up behind the weavers and allow them so much waste according to the weight of goods on which they are running, or just what steps are taken in handling this matter?

We would also like to have this same information with reference to 24-inch laundry net tubing, allowance, on both the plain weave and leno weave tubing fabrics.

CONTRIBUTOR NO. 4059.

Is the Multiple System Practical in the Coarse Goods Mill?

EDITOR COTTON:

I read with much interest the article on the multiple system in the August issue of COTTON. I would like to see some discussion by men who have put this system in a mill making coarse numbers.

In our mill we have 10,000 spindles making numbers from 3 1/2s to 12s, from 3/4 to 1-inch American cotton. About half of our work is on low-grade cotton and the other half is on white cotton. The cleaning schedule is about as follows: Wipe top and bottom roving once each day; wipe back sides morning and afternoon; pick rollers daily; brush spindle rails every hour; wipe thread guides every hour; clean separators Tuesday and Saturday; pick back and front roll stands each week and brush all rings and ring rails thoroughly once each week.

In the spinning room we sometimes have to change the numbers on all the filling frames every day, as we are weaving from 5-ounce to 17.08 ounce ducks. This would necessitate our figuring out a new multiple system every day. Our spinners run six sides and do all the cleaning on work averaging 6 1/2s. If we put the spinners on ten sides and took all the cleaning off of them, would they be able to keep the work up? Would the cleaner take the same care of the frames that she would if she knew that she had to put up every end that came down?

It seems to me that we would have to put on so many extra girls to do the cleaning that we would not gain anything by changing to the multiple system. Then, no two spinners do their cleaning in the same way and the result would be—Mary comes to you and says that Annie is not cleaning up her sides as she should, that she just can't run them. Dora comes up to say that Minnie has just left her rollers so nasty that her sides won't run and wants you to go down and look at them. If you go down and look at the sides and they look clean it would be hard to make her believe it. Of course you can run Minnie off, but you still haven't helped matters much.

If we can adopt the multiple system in the mill and save money, all is well. I will say that I believe that there is a lot of discussion yet to be brought out on this subject for mills on coarse numbers and I would like to hear from some of the readers.

S.L.E. (TEXAS.)

Hanging Ends on Nasmith Combers.

EDITOR COTTON:

In the August issue of COTTON, "Contributor No. 4043", relates a problem which he has on Nasmith combers of some ends hanging back and at times not coming through at all. In my experience in combing I have noted the same trouble several times with different causes. I will try to explain remedies I have found for the benefit of this man and any others who may experience a like trouble.

In one instance I found that the detaching rolls had been buffed too small. This caused weak places in the leather and when varnished these places will have a tendency to draw up, the result is a hollow roll that will not grip the fibers over the full length of the roll. I also would suggest that he have the detaching roll tapered slightly when he is having it trued up, starting the taper about half an inch from the end of the roll. This will be found to give the roll a better grip across its full length. This may be old stuff to "CONTRIBUTOR NO. 4043", but there are times when the best of us slip up on the little things.

Another time I had this same trouble when running a 1 5/8-inch staple cotton, taking out 18 per cent noils, with a 500-grain lap and the nipper set to a No. 13 step gauge from the steel detaching roll. I found that the comber setter had a habit of raising the nipper arm to increase the percentage. By bringing the arm to as near No. 37 on the index wheel as possible and still maintain a good piecing, this trouble was helped considerably. At the same time I increased the weight of the laps to 525 grains which gave the roll more of a tuft to hold to. At this point I should say we are feeding six teeth.

Muggy weather will cause the ends to cling to the cylinder needles and not come through the rolls. Plenty of whitening will help considerably but not totally, we must wait for good dry weather to put things in shape again.

Half the job of keeping combers running good depends upon humidity. On such days I have had the slot in the aspirator turned up until it came just outside of the waste roll, this would answer the same purpose as taking the can from the hand hole.

Another thing to look at is to see that the nipper cam and detaching cam are in good condition, also the rolls. The top comb settings would bear checking up, with the leather detaching roll set as close as possible to the top-comb and in alignment with the steel detaching roll. If the nippers do not open early enough, or open too late, the fleece will strike the nipper knife and will not come through. I would suggest opening the nippers to a No. 14 step gauge.

B.S.E.(CONN.)

The Wooden Middle Top Roll on Spinning.

EDITOR COTTON:

I notice in the August issue, "CONTRIBUTOR No. 4047" is having trouble with roving lapping on the wooden middle roll. He is using a 1 3/16-inch American cotton, spinning 60s from a 10 hank double roving. I would suggest that, instead of setting the center of the back top roll 1 3/8-inches from the center of the middle top roll, that he set them under the staple of the cotton.

From what I know of the Washburn roll, it was designed so that the rolls could be set under the length of staple and use up the short fibers that are usually lost in process.

Y.F.(R.I.)

Remedies for Rust and Scale on Rings.

EDITOR COTTON:

You recently published a question from a contributor who wanted some readers, particularly someone in Texas, to discuss the causes of rust and scale on ring rails, rings and flyers, and the formation of a fine powder on the travelers in the spinning rooms, especially near the humidifiers. He especially wanted to know if there was anything which could be put into the humidifier tank to precipitate this scale.

The only answer that I can offer as to the cause of this trouble is the humidity. Where the water supply for the humidifiers is hard water, this trouble can always be expected, because a precipitation is formed within the humidifier itself, which prevents it from functioning properly and causes it to throw out water in more or less solid form, or the water may contain chemicals which corrode and eat out parts of the humidifier system, producing the same effect.

We have had considerable trouble of this nature in one of our Texas mills, and have come to the conclusion that the only solution is a water softener plant outside of the mill entirely. It is not advisable to undertake to treat the water in the humidifier system itself, because the water treatment will cause a precipitation of the solids in the system. I know of one mill which installed a water softener plant for treating the water for the humidifier system more than a year ago, and it is my understanding that this has solved their problem in this connection.

If your contributor does not care to install a water softener plant, it will be necessary for him to keep at least one man busy all the time cleaning and adjusting his humidifier heads, regardless of what type they may be, keeping the precipitation condition so that the water is atomized at all times. Very often it is the case, as it is in one of our own mills, that the humidifier system is not adequate for the purpose, and in trying to secure sufficient humidity the system is crowded beyond capacity, and in all such cases one will find considerable rust on the machinery near these humidifiers.

C.D. (TEXAS.)

Do Cleaning Hands on Spinning Mean More Responsibility for the Overseer?

EDITOR COTTON:

I beg to differ with "CONTRIBUTOR No. 4025" in his view on using special hands for cleaning in spinning—in answering "B.T.(Ala.)"; he states that special hands to do all cleaning means more responsibility for the second hand or overseer, for it means extra help to manage and look after. I have not found this to be the case in many mills that have used help for cleaning only. A saving in cost with increased wages for the spinners has been the result with the multiple system. There are many advantages to be gained in the multiple system in the spinning room.

Experience has taught many men, including the writer, that greater efficiency results in a worker concentrating upon a single operation at one time. This is proven when an entire factory can devote all energy to the manufacturing of a single product.

The beginners are started on the cleaners' job with the smallest number of sides, and as they become more proficient in this work they are advanced to the full cleaners' job, which wage is about two-thirds that of the spinning wage. These cleaners can then be advanced to spinners. One or two sets of sides for spinners may be small enough to advance the cleaners onto spinning, at the same wage as the full cleaners' job. As her experience warrants, she should be advanced to the full spinners' job.

I am a great advocate of experienced help doing experienced work only. The unskilled operative should perform the tasks requiring the minimum amount of effort, for production and quality are necessary. The multiple system is up-to-date, and is the trend in many mills today. It has many advantages. It enables the operative to become more satisfied with her work; she becomes more adept, and so improves the quality of her work.

In answer to the questions asked by "B.T.(Ala.)" will say, a system that would be run in another mill might not be of advantage in his particular mill.

How many more sides should a spinner be able to run? This depends on many variables, which include the size of the roving bobbin, production put through and the amount of end breakage per 1,000 spindles per hour.

Not doing anything else, how many frames should a good hand be able to clean? This depends upon the length of frame, the yarn numbers run, whether coarse or fine and the amount of cleaning necessary according to the grade of cotton used. The number of sides per cleaner, vary in different mills from 25 sides to 40 sides.

The question was asked if any cleaning should be done by the spinners when cleaners are used. I am strongly in favor of no cleaning being done by the spinners.

The wages used have to be adjusted when instituting this system, and if all conditions are not studied thoroughly, a saving in labor cost is not obtainable. Good work

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must come from the card room, and all machines must be kept in good mechanical condition, and end breakage tests must be run to determine how the work is running and to determine the number of spindles the spinner can run.

The cleaners' cleaning schedule should be laid out so that they will not be cleaning one thing continually. For instance, cleaning rolls on all the sides at one time is a tiresome and hard operation. A certain number of frames should be cleaned, and then some other cleaning should be done. While I stated previously that the division of labor increases the worker's efficiency, it possesses some disadvantages, and may be carried to a point that is harmful to the worker. The work becomes monotonous and wearying. It is a well known fact that continually doing one operation, even though pleasant in the beginning, it will finally become most distasteful, if not painful. The cleaning has to be distributed throughout the day's schedule, with periodical rest times. The rest periods are determined according to the hours run by the mill.

CONTRIBUTOR No. 4026.

A Useful Draft and Hank Roving Chart.

EDITOR COTTON:

The accompanying chart is being sent to show a convenient method of displaying the drafts and hank rovings. It is suggested that a framed copy of such a chart be hung in the offices of the superintendent, carder, and spinner. The chart is especially useful in mills where considerable changing of yarn numbers and hank rovings takes place.

The figures used in the chart are not intended to represent a model lay-out. They are merely used to show how the chart works. It is suggested that the readers of "How Other Men Manage" fit their organization figures to a similar chart.

The figures under the heading marked "Draft" show the drafts at the spinning. Those figures followed by a *D*, for example 9.41-*D*, show that the roving is doubled at the spinning. Those not followed by a *D* are single roving.

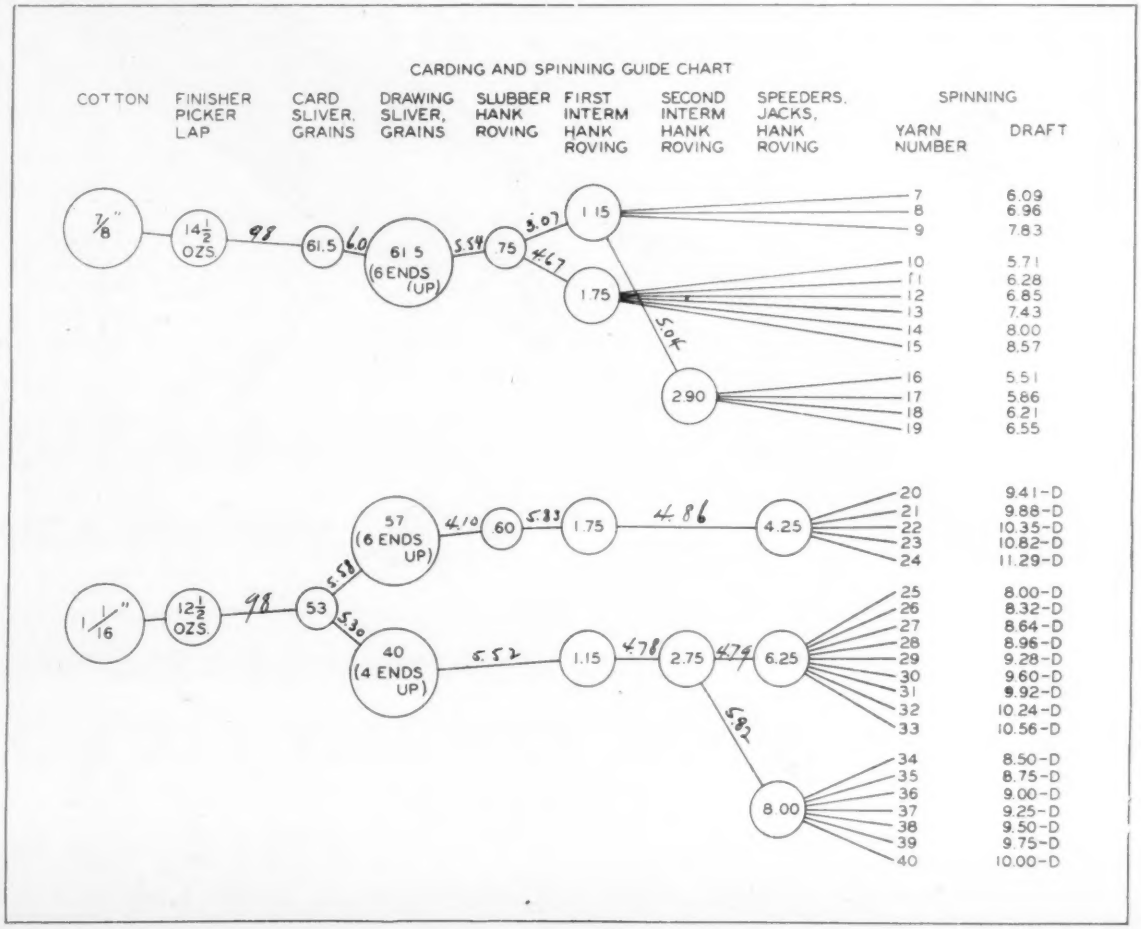
The figures above the lines that join the circles show the draft between the two processes joined. For example, between 2.75 hank roving and 8.00-hank roving the figures 5.82 are placed. This shows that the draft at the speeders where the 8.00-hank roving is made is 5.82.

J.W.C. (TENN.)

Running Humidifiers Over the Week-End.

EDITOR COTTON:

In answer to the question of "Contributor No. 4016," published in the June number of COTTON, will say that the practice of continuing humidification in the mill over a week-end or any brief shutdown is an excellent one, but in cold weather it is advisable to continue the operation of



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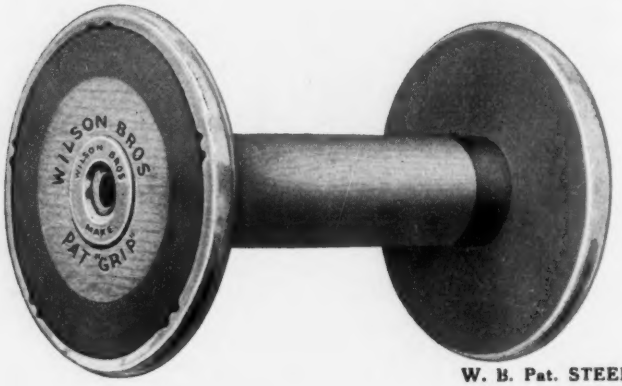

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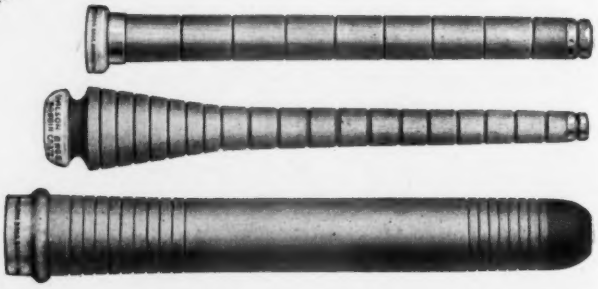

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the heating system at normal temperatures and under automatic control. A little consideration of the principles involved will explain the excellent results which follow this practice when given an intelligent trial.

Maintaining the usual relative humidity during a shutdown insures the continued retention of the same hygroscopic moisture content or regain in all material in creels, on bobbins or in storage in the department. Consequently, when production is resumed, there is no change in the breaking strength of the yarn or in the effect of traveler tension and draft rolls on spinning frames, and no change in draft tension or lay on roving frames. Static electricity is also as effectively suppressed when starting up the mill as prior to shutting it down.

Temperature change has, however, a very important bearing which must be considered, if humidity is to be maintained, for reasons which I will attempt to explain. Let us suppose that we are arranging to maintain the usual humidity during a shutdown but allow the temperature to fall to 50 degrees or 60 degrees with the intention of saving fuel. When the temperature of the air has fallen to these lower levels it will require less water vapor to maintain the humidity than when the temperature is at the usual level, so the maintenance of the humidity is an easy matter. But during the shutdown the temperature of every piece of metal in the department will fall along with the temperature of the air and the steel heddles, knitting needles or machine frames will all cool down to the lower temperature.

When the mill is warmed up again preparatory to starting up, the metal in the mill will be very slow to return to the normal temperature although the air temperature will rise very quickly. There is grave danger, therefore, that after the mill has been warmed up and started, much of the metal in it will be below what is known as the "dew point" temperature, and when this happens moisture will be condensed upon any metallic surface which is below the dew point, so that there is danger of rusting steel heddles, needles or machinery surfaces resulting from failure to warm up the machinery at the proper time.

It is therefore very important to take care of the temperature question as well as the humidity if it is wished to take advantage of the good results produced by continued favorable atmospheric conditions during a shut down.

It is proper to add that the practice of allowing a mill to cool off during a shutdown of any ordinary length is not a wise one and seldom results in any economy of fuel. To raise a cold mill to a proper operating temperature requires a very rapid supply of heat—not only must the walls, the machinery and the air in the building all be raised to the higher temperature, but while that rise in temperature is going on all the ordinary heat losses are also going on, and the fuel required to effect this rise in temperature will equal, and frequently will exceed, the amount of fuel necessary to maintain a normal temperature during the shutdown.

During the warmer portions of the year, when no artificial heat is necessary, the arguments which I have just advanced do not of course apply. It would however be misleading to advocate continuous humidification during shutdowns without explaining the risk involved if temperature is not given due consideration.

As to the extent to which this practice has been adopted: the writer knows of several successful mills who are following this practice and knows of no case where, once adopted, the practice has been abandoned, which is a good index of its success. As to the direct value of the practice, I am told that the mill starts up with the immediate resumption of normal production unaccompanied by any excessive end breakage or incidental wastes, which are so annoying and which are ordinarily expected to last for hours when starting up a cold mill. In fact, I have heard it confidently stated in such cases that the increased production is fairly equivalent to at least half an hour of normal operation. If this is a fair estimate of the gain we need only deduct from the market price of the material produced in thirty minutes the cost of the corresponding raw material to find the gross saving, and compare this with the actual cost of operating the heating system and humidifiers during the shutdown in order to estimate the actual net economy.

If your inquirer is well equipped with a humidifying system and his apparatus is kept in good order, he need have no hesitation in testing this practice with the precautions which have been suggested.

THIRSTY COTTON.

Should this Waste be Prevented?

EDITOR COTTON:

I have read many fine articles in your magazine on the subject of opening and cleaning cotton, yet there are one or two points in this process that have never been clearly explained by the various writers.

After the bale is opened, and the cotton is fed onto the apron of the bale breaker, passing through the vertical opener, much dirt is taken out, also seeds. I have noticed that there is also a large amount of fly cotton falling at the same time, and upon examining this waste cotton it will be found that there is much of it which should have passed along into the work. I do not mean the cotton when opened out will disclose motes or seeds in the center, or very short staples, but loose fibers, entirely free from any dirt or seeds and the full staple that seems to be carried to the bottom of the vertical opener through the grid bars of the machine either by the weight of the dirt or by the suction of the draft. I would like to ask if these cotton fibers should be thrown out along with the dirt and waste or whether they are put back into the work and reclaimed.

Again, as the cotton passes up and down through the cleaning machines, the dirt falls through the grate at the bottom, and here will be found the same condition as before, namely, long, loose, full-staple fibers lying among the dirt and seeds taken out. It is obvious that if the cotton is to be thoroughly cleaned, it must attain an open condition as soon as possible after opening the bale and starting it through the cleaning machine, and there are sure to be small bunches of cotton with a hard seed in the center or pressed so as to form a lump of sufficient weight as to force the cotton down through the grate into the compartment for holding the dirt and seeds may fall out.

Careful observation of this cleaning and opening machine in operation shows that there is always a certain amount of good reclaimable fibers that fall in the waste taken out. This point, together with the fact that very little has ever been written about the cotton which has fallen through the grid bars of the machine, leads me to wonder if other mills have this same condition and have not

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given it any attention, or, whether the grid bars at the plant of which I am speaking, are not set properly.

Some overseers may be of the opinion that it would not be profitable to reclaim the good material from this waste and dirt. However, someone may be able to inform me as to whether we have to expect this loss or to look at the grid bars and readjust them. I wish to make it very clear that it is not the lumps of cotton with seeds imbedded in the center, or the short fibers to which I refer, but the long staple cotton that is mixed with them.

The most efficient opening and cleaning machine ever constructed, will, no doubt, allow some of this good material to be carried through the bars into the waste, but it seems that what falls out with the dirt and seeds into the bottom of this machine is called waste, even if it contains a large amount of good reclaimable material. I have often noticed men working in the opening room picking off small pieces of cotton from the bagging in order to save as much as possible, and later in the day, when these machines are cleaned, will carry out with the waste, many pounds of good material.

Again, in the process of picking, I have noticed that when the cotton reaches the breaker picker and passes through the first beater, upon an examination of the picker waste falling through the grid bars, small bunches of fluffy cotton among the seeds and dirt, that seemed to be carried down through the grid bars either by the weight of the dirt and seeds or by not having sufficient fan speed.

The function of the picker, as we know, is to further clean the cotton by beating and taking out the seeds and dirt that may be left after the opening process, but why should we allow good clean cotton to be drawn down through the bars into the dirt and seeds without trying to find some method of stopping it? No one will dispute the contention that there is always a waste problem to be considered in the picker room, and that there will always be a difference of opinion between men as to whether this cotton that falls to the floor is reclaimable or not. Neither can it be denied that if good clean cotton is falling in among the picker waste, it forms an element of waste that should be given attention.

With all the advantages to be gained by the use of the new adjustable grid bars, this condition of waste should be eliminated, or at least reduced to a minimum. We may think that it does not make any difference in the ultimate results whether these good fibers are allowed to be classed as waste, but for every pound that is taken out as waste, the mill loses by the excess waste and the difference it will make when the cost is figured out.

A peculiar thing about waste made in the card room, or in any other room is: the average man does not care to analyze it, or, if he does, he will side-step the issue with the remark that the amount of reclaimable material is not worth the time given to save it.

With these thoughts in mind, I would like to see something from someone else on the cleaning of cotton; what is done with the waste; also, what percentage of waste will be secured from each machine, consistent with the best results to the work. I know there are many readers, like myself, who would be glad to read articles of this kind, and I am sure we would all benefit by them. Even if out of a dozen articles we get only one new idea, the articles will not have been written in vain.

CONTRIBUTOR No. 4064.

Figuring the Eyes Per Inch in Harness.

EDITOR COTTON:

Replying to the inquiry of "CONTRIBUTOR No. 4037" who is seeking information as to a short method of figuring the number of eyes per inch in different sley harness—I note that he is concerned particularly with a calculation for 144-sley broadcloth, 5350 ends, 37 inches wide, using six harnesses.

Most of the rules that are available for making accurate calculations of the reeds and harness to be used to make a desired piece of goods presuppose that we know something definite about this particular weave. For instance: a standard authority on cloth calculations indexes rules for making reed calculations as follows:

1. "To find the number of ends in the warp if the reed No., threads per dent and width of warp in reed are known."
2. "To find the reed number if the number of ends in the warp, and width in reed are known, the ends per dent either given or to be selected according to the fabric."
3. "To find the width of warp in the reed if the reed number, ends per dent, and the number of ends in the warp are known."

All of these are elementary problems and are of little or no value to the superintendent who wishes to select the proper reed and harness for a particular weave. His real problem is to make a correct piece of goods knowing the width, count, weight and approximate yarn numbers. Obviously the eyes per inch in the harness can be easily determined from the reed number and I shall treat this as a reed problem.

Assuming that the 144-sley broadcloth will be woven three ends per dent and that there would be no filling contraction the formula would be: Ends per inch in fabric ÷ ends per dent in reed equals dents per inch or in this case:

144 ÷ 3 = 48 dents per inch.

To follow this rule would mean that the count of the woven sample would exceed the desired count by an amount equivalent to the contraction of the goods. It is therefore necessary to find some means of accurately determining the rate of contraction or width in reed to be expected.

There are several ways of doing this and the following is suggested.

(1) Obtain ratio of width of goods to width in reed of similar fabrics on which you have definite information which let us assume would be 37 inch — 128/68 and measures as follows: 37 1/8-inches actual width ÷ 38 7/8-inches width in reed.

$$\text{Ratio} = \frac{37.125}{38.875} = .955$$

The reed to be used could then be figured as follows:

$$\frac{144 \times .955}{3} = \frac{137.52}{3} = 45.84$$

(2) Estimate filling contraction from actual sample of cloth, when available, of correct count; figure ratio and apply to formula as explained.

(3) Assume a reasonable contraction, based on previous experience and apply as explained.

To find the eyes per inch in the harness, the same formula used to determine the reed could be used as follows:

Ends per inch in cloth × ratio cloth width to width in reed and divided by the number of shades, or—

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$$\frac{144 \times .955}{6} = 22.92 \text{ eyes per inch.}$$

It has been the experience of the writer that even after the most careful figuring has been done, it is always advisable to make up a sample warp for any new construction and run a few yards for careful analysis before ordering reeds and harness for a number of looms. This is particularly true of high count goods because of the fact that a small error will make enough difference in the woven sample to be detected with a pick glass.

There is just one other point that I would like to mention in regard to this problem, that it is not safe to adopt the same count reed and harness that a competing mill has used to make the same construction. Oftentimes this mill is making sub-count goods that have never been complained of but this is no assurance that our customers will not be smarter than theirs and catch this on the first delivery.

B.S.(GA.)

EDITOR COTTON:

"CONTRIBUTOR NO. 4037", in the August issue of COTTON, wants to know how to figure the eyes per inch on harness for 144 sley broad cloth. I would suggest that he try the following:

Subtract 1 from the sley and divide by the number of harness, which he says is six. Multiply the result by .95. I am sure the result will be the required eyes per inch for each harness. In his special case I would try 22.80 eyes per inch.

C.A.(GA.)

The Possibilities of a Good Section Man.

EDITOR COTTON:

I enjoyed reading, in the June number of COTTON, the letter by "T. A. D. (Ga.)" entitled "System and the Cloth Room". First, let me say, that since I am not a cloth room man, I will let someone else give him the blistering that he is expecting. However, I will try to give herewith a few observations on system.

No system will work itself. The officials of the mill, from the superintendent to the section man, must see to it personally that things move as they should.

The human element of the mill plays such a large part in its success or failure, that I believe we should discuss this more and give more thought to this subject than we have been doing. The carding division of the Southern Textile Association hit the key-note in their January meeting, in Columbia, S. C., in their discussion of "The Responsibilities of the Overseer". The more we learn about human nature and about our relations to each other, the better our jobs will run, I believe. How often we find ourselves in the attitude of thinking that some of the fellows are not cooperating with us, when really what we mean is that they are not doing everything just to suit us.

Let us consider for a little bit the section man. Some have said that he is the key-man of the mill; truly much depends upon him. A good section man is a jewel, much to be desired, and how often the overseer fails to appreciate that he has a good one. On the other hand, many overseers fail to realize the importance of this man's place in the organization, and put men on this job who are wholly incompetent, much to the hurt of the mill.

Since the section man is a leader of those who work on his section, he must possess qualifications such as initiative, tact, loyalty, courtesy and the many other things that go into the making of a leader. He should have the mechanical knowledge and experience necessary to do the repair work on his machines. I will qualify this last statement by saying that of course he is not expected to do the work of the machine shop, such as welding, etc., but, with the cooperation of the machine shop, should be able to keep his machines in good repair. He will look after the cleanliness of his section, seeing that each one of his section hands does his share of the cleaning, according to the schedule of the room.

He must see to it that the stock in process moves along as it should, being constantly on the alert for bad work of all kinds. Here the section man can, by example, do much to prevent bad work. I will cite some things that I have seen section men doing, for which they would immediately jack up their help. I have seen loom fixers wipe their greasy hands on the warp or on the finished cloth. A quiller section man was seen to ruin several pounds of good filling trying to make a spindle run, when he could have taken a small piece and re-run it until he got the spindle adjusted. It is not an uncommon thing in the spinning room to see the section men get up ends while their hands are greasy, and I have seen them get up ends that had been running down for some time without pulling off the yarn on the adjacent ends that had been ruined by flyings from the first ends down. He should teach by example, as well as by precept.

The section man is called upon to exercise a quality of leadership not found in everybody, even in some of his superiors, that of being able to get things done without the authority to discharge if his orders are not carried out. I honestly believe that on this point hinges one's success or failure as a section man. It is here that tact must be exercised. To be loyal to his overseer and to his company is one of the first requirements of a good section man, so to get his help to cooperate with him in carrying out the mill's policies and to get them to obey the rules of the room as laid down by the overseer, without having to report them, is his great task. Of course there comes a time when a man must be reported. Now the wise overseer can cooperate with his section man by not letting it be known who reported him, where possible, and if the circumstances will justify delaying action, a better plan would be for the overseer or the second hand to keep an eye on the man and catch up with him personally. Then he can handle the situation without embarrassing the section man. The section man should watch himself and not "get it in for" a man. If a man is being frequently reported by a section man, the overseer should investigate the matter closely, and if he feels that the section man is in any way prejudiced, should give him a talk. In this connection, the overseer will try in all cases to back up his section men, but if their actions are such that he cannot do so, then he should get someone that he can support.

While the section man must be friendly with his help and not appear "stuck up", he must also avoid the other extreme—joking and playing while on the job. The help will soon lose respect for him if he does. I once knew of a section man who was splendid on the job except for this one failing. One day he gave an order to one of his men, and upon the failure of the man to carry it out, he was reported to the second hand. The second hand asked the man why he had failed to obey orders. He answered, "Why I

thought he was just joking; he is always joking and playing with us fellows".

Economy in the use of supplies should be constantly urged upon the section men, yet they must be furnished with sufficient supplies to keep up the machines. A system of inspection by the second hand will assure that the machines are not being neglected. A good work-bench with a vise and sufficient storage space for supplies, should be provided each man where possible. The supplies should be kept locked, and only he and the second hand carry a key to this space. A very common mistake made by section men is that of accumulating more supplies than necessary, causing a waste by the mere fact of having an abundance on hand. Some mills budget their supplies, allowing each man just so much per day, except in cases of emergency. Others employ what is known as section men's contests, giving each man a standard based on past performance, and awarding premiums to those saving the greatest per cent on their standard. A spirit of friendly rivalry is created, and job pride, that keeps a man on his toes trying to stay ahead. It is necessary with all such contests to employ some system of inspection by the department heads to make sure that the machinery is being kept up.

One mill, in its large weave room, awards each week a premium to the loom fixer and the weavers on the "quality section", that is, the section having the best grade of cloth and making the least number of trips to the cloth room for the week. Here is a good place for the section man to demonstrate his ability as a leader by getting his weavers properly lined up so that they will all pull together for their section. He will have to encourage the weaker fellows and get the men to cooperate with each other in watching for defects, and otherwise rendering assistance to one another. In one mill, in the spinning room, a prize was offered to the section man having the least amount of "broke back" ends in a given time. Contests of this kind, when run judiciously, often prove the means of raising the standards of the sections as well as saving some money for the mill.

To get the men to cooperate with each other, as well as with the mill in general, is always a problem. A few mills have successfully met this problem in the section men's meetings. Other mills seeing the good that is being accomplished are following in this. One mill has monthly meetings for the overseer, second hands, section men, and a small representation from the department in general, for each department. In this meeting departmental problems are handled. Here the foreman acquaints his men with prospective changes in mill policies; complaints from other departments on bad work from this department; complaints from the customer on the quality of the goods the mill is turning out, etc. The men are free to discuss these, or any other matters that they may choose, and suggest ways and means of meeting the conditions and so forth. Then three or four times each year this mill has a general meeting in which the superintendent, with his assistant, the foremen, second hands, section men and often the leaders of the other interests of the village take part. The superintendent presides and uses this opportunity to weld his men together in a community of purpose and action. Frequently at this meeting a resume of the proceedings of the sectional meetings is given and inter-departmental problems are thrashed out. At each of these meetings a good supper is provided by the mill.

I realize that I have hardly touched this great subject. A volume might be written and leave much unsaid, but let us give more thought to the training of our section men, the future leaders of our great industry.

CONTRIBUTOR No. 4022.

Preventing Curved and Crooked Cloth.

EDITOR COTTON:

What causes cloth to curve? This question was asked in a recent issue by "L.D.(GA)." He said on his indigo stripe goods, in which the indigo is dyed long chain, then beamed, being joined with the white beams at the slasher—when the cloth runs through the cloth room, one edge runs tight and the other slack, making it take the form of a large circle when it is laid on a cutting table. In answer, I would offer the following suggestions to anyone having this trouble:

Check the cloth take-up roll empty and full to be sure it is parallel and in line with the sand roll. The take-up roll bearings might be worn or the gears slipping. Check the sand roll, lay, harness, drop wire girt, whip roll, and loom beam to be sure they are relatively level and parallel. Check the presser roll on the slasher for alignment relative to the loom beam.

Check the slashers, beamers and warpers for alignment as follows: Draw a center line through the entire machine and check the following square with this line, and also level: (a) Friction rolls; (b) counter on ball warper; (c) hacks and various carrying rolls; (d) creels; and (e) split rods on slashers. Also on the slashers, be certain the squeeze rolls are cylindrical and have the same squeeze all the way across. One other point: A hack might expand improperly and lay the ends closer on one side of the beam than the other. I would suggest that these points be checked in the order named until the trouble is located.

CONTRIBUTOR No. 4051.

EDITOR COTTON:

This is written to discuss the probable causes of cloth with one side running slack and the other tight, producing a curved or bowed effect. This was brought up by "L.D. (GA.)" in the August issue.

We have had this same trouble at various times in the past, and I give below, in the order of their importance, the things we have discovered will cause this defect:

1. One end of the sand roll on the loom higher than the other end.
2. One end of the whip roll higher than the other end.
3. One end of the loom lathe higher than the other end.
4. Harness not level.
5. One temple higher than the other.
6. Strings wound around one end of the sand roll.
7. Sand roll covering loose on one end of the sand roll.
8. One Pittman arm longer than the other.
9. Stitcher boy in cloth room gripping cloth on one selvage while running over the rod on stitcher machine.

All of these causes, and possibly others, can be grouped under the general idea that either the cloth is stretched more on one selvage than the other by reason of unparallel rollers and things of that nature; or that the cloth has received more friction on some sort on one selvage than on the other. At least, we have been able in the past to stop this trouble by the correction of one or more of these defects.

R.H.(TEXAS.)

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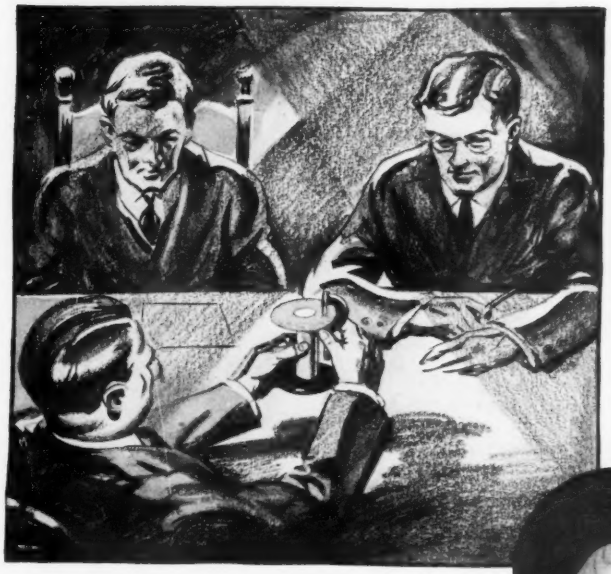

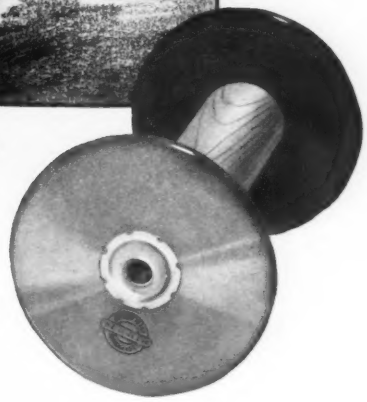

"That's why" the chairman stated

THE annual report had just been read. The largeness of an item for spool replacements immediately caused unfavorable comment.

One director was of the opinion that in addition to the cost of frequent replacements there was a distinct loss of quality of production, owing to spool inaccuracies. Moreover it was his belief that care should be taken in the selection of fibre spools, as even fibre spools varied in efficiency.

The Chairman agreed with him. Said he, "It seems to be the sentiment of this meeting that we equip with Lestershire Fibre Head Spools. This is a wise choice, in my opinion. Our engineers report that Lestershires are made to micrometer accuracy. This extreme care in construction, it seems, results in direct spool economies and a gain in quality of production. And of course Lestershire heads do not break or splinter, and cannot come off."

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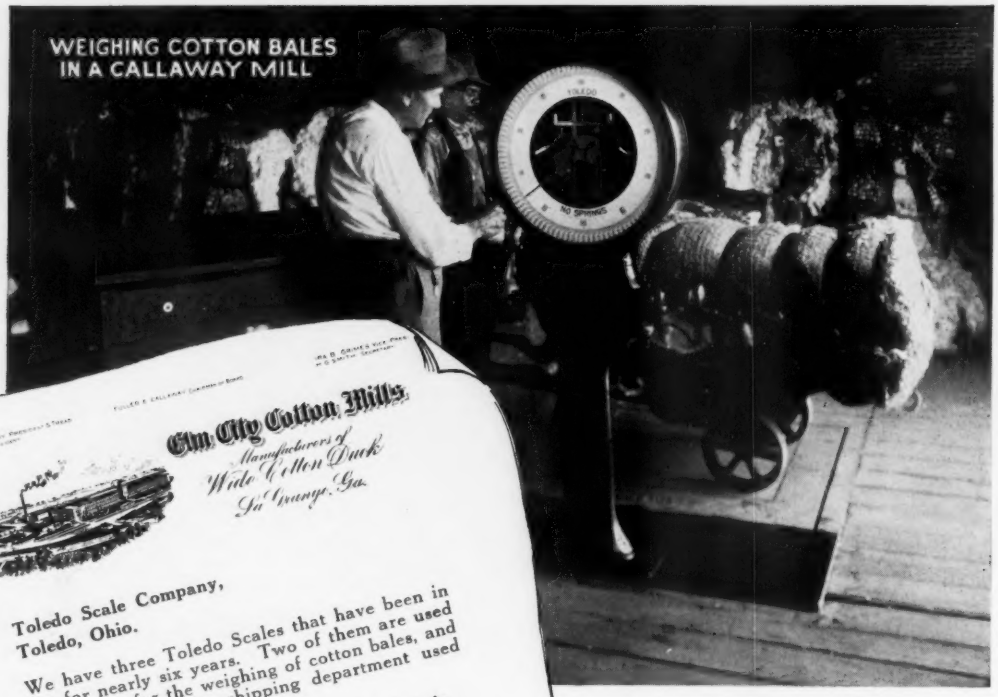

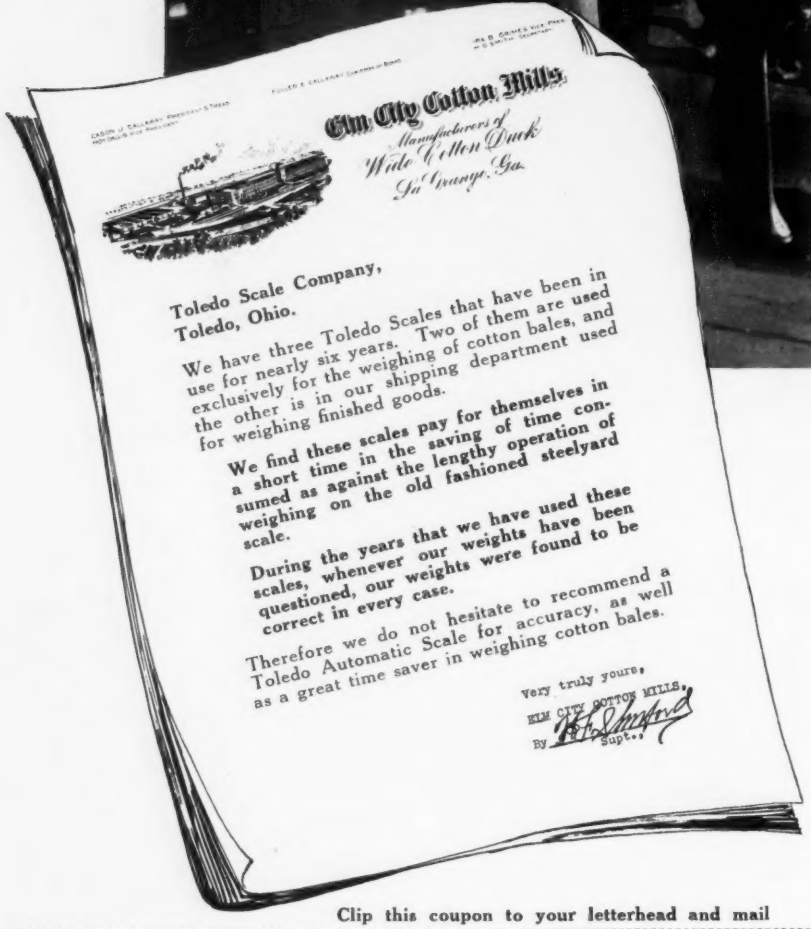

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Cotton Oct. 1928.

Running Double and Twisted Selvage on Slasher.

(Editor's Note.—The reader will recall that on page 937 of the July issue, "Old-Timer" showed a sketch and gave an explanation of a method of running double and twisted selvage at the slasher. He subsequently had considerable correspondence about it with a South Carolina reader who couldn't understand it, and "Old Timer" has sent us the following further details which are published to clarify the description for other readers interested.)

EDITOR COTTON:

After you published my description to Jim of how to run double and twisted selvages at the slasher, in the July number, I got some inquiries for further information regarding the sketch and discussion. Thinking this will be of interest to other readers, I am giving you the additional explanation which I furnished to the inquirers.

You will remember that Jim and I were talking about how to do this, and I suggested that he do away with his separate creel for the spools of twisted yarn and go to the warper and put the spools of twisted yarn right in the warper creel so the twisted selvage would all be on one warper beam for a set. Jim said he had tried that, but the twisted yarn piled up too fast on the warper beam.

I then explained to him that he should skip every other dent in the warper comb where the double and twisted threads were, then they would not pile up. Then I told him to put the warper beam containing the double and twisted threads next to the size box, and run the twisted threads through the slasher. The sketch used showed that the selvage threads were to be run *over* the size box up to a guide hooked to the hood over the size box. The selvage yarn thus would not pass through the size, but would join the single yarn at the first squeeze roll, after the sheet of warp had passed through the size underneath the immersion roll.

One of the men who couldn't understand this asked me if, when a lease is laid in this way, and the immersion roller run down, the twisted selvage wouldn't be left slack; and also, when the immersion roller is wound out, why it wouldn't break the selvage.

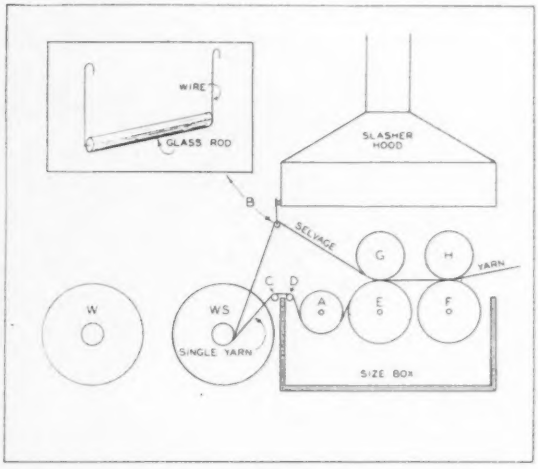
He asked me to step into the slasher room and raise the immersion roll and see what happened; that he couldn't see how a set could be started in this way. He said it had always been his experience that when the double and twisted selvages are on the beam and over the immersion roller, when a set is laid, and this roller lowered, the selvage slackens about a yarn; and that on the other hand, when it is necessary to raise the roller, the selvage breaks.

In answer, I explained that the little stand over which the selvage yarn is carried is merely a glass rod with a round iron rod run through it, as shown in the inset sketch *B*, herewith. This stand merely hooks onto the hood as shown in the large sketch.

Then, I told him, that, as he requested, I stepped into the slasher room; I put the slasher on slow speed preparatory to closing down for the night. I lifted the squeeze roller off of the large copper roller. Then I *raised* the immersion roller, *at the same time lowering* the little stand carrying the twisted selvage—and the selvage didn't break! It wouldn't.

This man also said that in lowering the immersion roller, the selvage slackens about a yard. Surely it does, and if it didn't it would be impossible to raise the stand carrying the selvage up to hook it onto the hood, and by having this slack to raise up the hook, it is also there to let back down when the immersion roller is raised, prevent the selvage from breaking.

I think that by referring to the accompanying sketches,



W and WS—Section Beams; C and D—Carrier Rolls; A—Immersion Roller; G and H—Squeeze Rolls; B—Stand for Selvage.

it will be evident that if the roller *A* is raised, if a man will at the same time take hold of the stand *B*, and *lower it*, that the selvage cannot break, but will come right on down until roller *A* is out of the size. The height of B is governed by the amount of yarn it takes to go over the carrier rolls *C* and *D*, under *A*, and up to the copper roller *E*. When *A* is lowered, *B* is raised, and vice versa.

Old Timer.

Recommends Closer Cooperation.

EDITOR COTTON:

In the May issue of COTTON, on page 723, "S.E.M. (Mass.)" contributed an article on "Controlling Costs and Production", which should be read several times by all mill men, from section man to president.

I am an overseer of spinning, and see things happen every day that carry my attention back to this article. I know of several mills in the South which are having a hard time. Their superintendents and overseers are just happy-go-lucky fellows waiting for stopping time and payday. Sometimes I want to get in behind them with a heavy pair of boots. Any overseer or superintendent who runs out of something to do and cannot think of anything else, should get out of the mill business. The superintendent should get his overseers together two or three times a week to discuss matters pertaining to the mill, and not "shoot the bull", giving each overseer a chance to talk and showing all of them that the mill has their interest at heart.

The overseers should inspect each others' departments once a week, of course with the authority of the superintendent. A report should be made of dirty places around such points as work benches, corners, floors, etc., guards of

In the final analysis, it is not what a production unit costs but what it produces per invested dollar that counts. ¶ The Tolhurst Center Slung Extractor with self-contained motor drive offers simplicity of operation and ease in loading and unloading in addition to larger capacity. ¶ Definite operating economies* result from its drive and friction clutch. The Tolhurst Automatic Timer assures uniformly wrung loads and saves the operator's time by applying the brake and signalling by bell and light at the expiration of the run.

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machines and on the general condition of the rooms. It is pretty hard to run a mill down if the proper system is used.

Each department should be operated on the budget plan, covering so much money for each process. I don't think there are many superintendents who get after the little details of the mill close enough.

CONTRIBUTOR No. 4031.

More About Cop Waste.

EDITOR COTTON:

I notice in the April issue, that "Contributor No. 937" has been having trouble with his waste from cop filling. I am sure from his article, that he is going the right way to eliminate the excess waste, and I am trying to give him several hints and suggestions as to the general working of cop filling.

As one who has been used to the mule cop filling, for the most part, since entering the mill, I have seen cops used in the gray, bleached, dyed and rewound styles.

I presume this contributor is a superintendent or manager, so the first item is that he should make sure that his mule overseer builds his cops to suit the shuttle used in the weave room. Cops must be built just slightly smaller than the excavated body of the shuttle and slightly less in length than the shuttle peg. A nice size is 5 3/4-inches long and 5/8-inch in diameter. The base should not be too long, and if the cop is made on the bare spindle, the building should commence after about four turns of the wind-on.

I prefer cops spun onto small tubes such as are used for cops spun for bleaching or dyeing in that form. This way may seem at first to be more costly, but it is the results that count, and a trained weaver will be able to weave the yarn off complete to the bare tube.

In calculations for filling, if proper records are kept, a superintendent can easily ascertain the amount to allow for waste. I generally allow five per cent for the bare spindle and six per cent for the tubes, and find that this usually works out.

I mention tubes mostly in regard to fine counts, as I know them: 50s to 120s. Otherwise, in the medium and coarse counts, I prefer the paste bottoms or bare spindle.

If "Contributor No. 937" buys his yarns from a spinner, then all that is necessary is that he send to his spinner a shuttle, or one of each size if he is using several sizes, and in ordering his cops he can give the size of the peg for which he needs the cops, and then the spinner can easily arrange to suit his requirements. If he is spinning his own yarns, then so much the better.

The cops should be carefully packed and not tumbled into skips or boxes, then the filling carriers, battery fillers or anyone who has to handle the cops, should be trained to care for the filling in a proper manner. Cops piled into boxes with the noses jammed either against the sides or bottom are a source of trouble and make plenty of waste. If paste bottoms, they may be flattened and need "readying". Cops for bleaching should be packed with a peg of about half an inch long, as in this process the cops are what is termed pack-bleached, and the peg keeps the center of the cop open for the insertion of the shuttle peg.

Any trained weaver can easily remedy a "stabbed" cop and by pulling out the center of the base and using a discarded cop bottom, it will easily weave off the cop. Oth-

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ers will pull it up, and it is such as these who are the cause of excessive waste.

I notice this contributor speaks of one inch to one and a half inch of yarn being left onto the tubes, and I presume from this that he is using through tubes, and from his remarks, he must be using them over again. That is one source of his excessive waste. I would suggest that he look over his mules when his tubers have just filled up the spindles, and see how unlevel they are. I should discard these and use the small tubes, unless he is using condensor filling; then by all means use the through tube, and use new tubes for each cop spun. In my younger days a weaver was given plenty of instructions on how to shuttle a cop, and was not considered proficient until he or she knew how; that is, by taking the cop in the left hand, shaping the hand to hold the cop gently but firmly, and using the right hand to hold the shuttle, pushing the peg along the tube or center, gradually feeling the way to see that all is clear, not screwing it on, as this is a cause of broken caps and cops flying off, bringing other troubles in their wake.

If cops are too tight, then they have not been made according to instructions, and that fault must be remedied at once, and the same applies to a large spindle hole. I have found that a double spring shuttle peg is the best for through tubes, that is, a spring on each side.

Weavers have all sorts of little gadgets to keep on the cops to enable them to wind off during the weaving, but most of them, though serviceable, are not necessary if the cops are spun well, or I should say if the building is correct during winding on of the yarn. Springs are bent and have as many humps as a camel. This necessitates a new peg; consequently less life for the shuttle. Regarding the mule overseer's remarks as to the cause of cops breaking in the middle because the spinner had not seen the end down and consequently the end when pieced up was winding on slackly—this sounds to me like the spinners are rather neglectful or do not know the remedy. When this occurs the spinners generally use their judgment and push the cop up a little on the spindle so as to counteract soft places. I have used the cross wind on coarse counts and found it to be satisfactory. There is less likelihood of "ballooning" and the noses are not ravelled and the wind allows for better conditioning of the cop besides more even tension during weaving.

I cannot say that I care for the steaming of cops, it is drastic, and perhaps though necessary sometimes, I rather prefer the natural conditioning of the yarn. If a man has a cool place, with plenty of humidity, I advise him to arrange matters so that he has a stock of yarn a week or ten days ahead of his weavers' requirements, allowing plenty of fresh cool air space around each box or skip. He admits to stains, iron or other organic matter, and he may be easily asking for trouble if he has to stock his goods for any length of time, in the form of mildew, as the spores of that fungus are always about and it only needs a few degrees of dampness and lack of air to cultivate these dangerous, destructive and expensive pests.

In regard to the methods of dealing with weavers in the matter of waste, there is only one sure way, and that is to weigh out the calculated weight of filling per cut plus the waste allowance and check the waste, (this is actually done at several mills to my personal knowledge). It is not necessary to work this system all the time, but I should suggest tests being taken occasionally, otherwise the weaving

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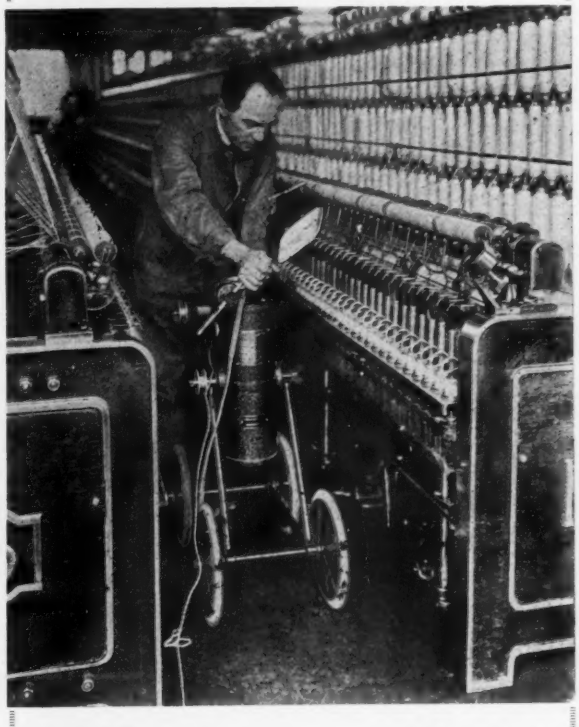

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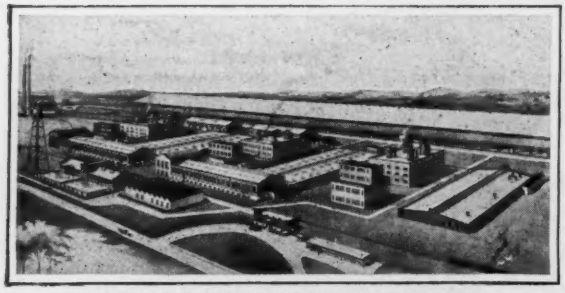

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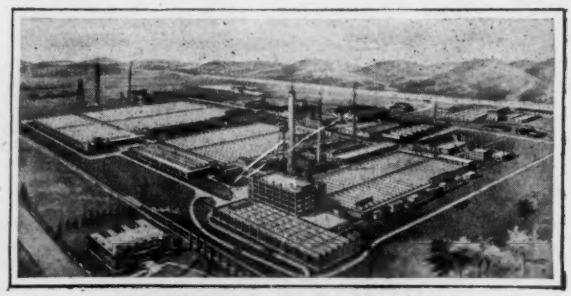

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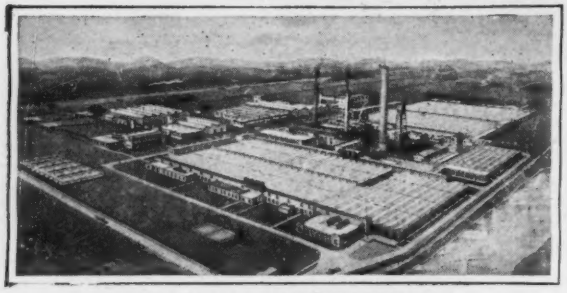

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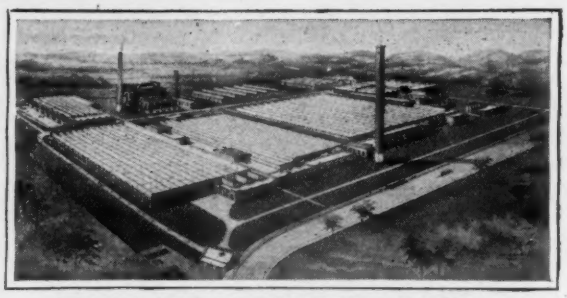

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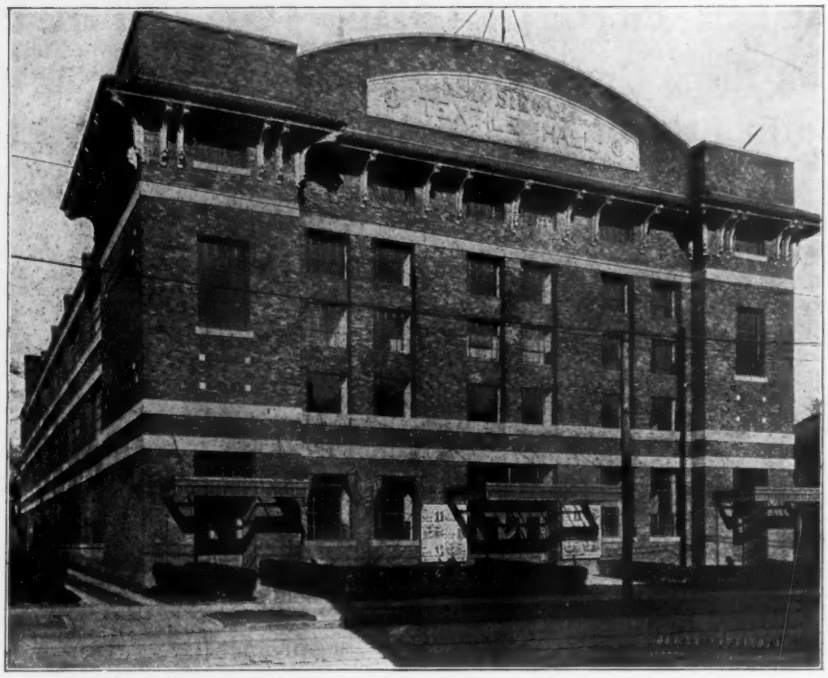

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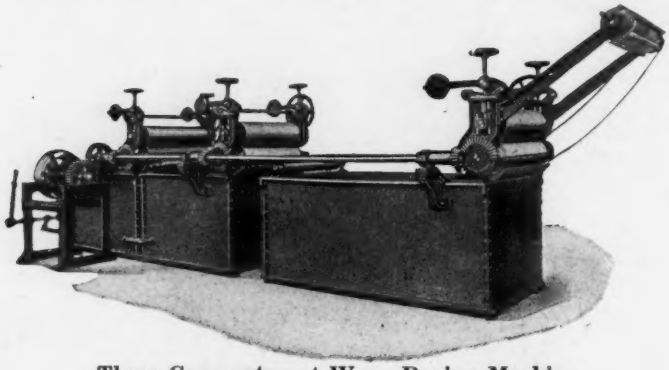

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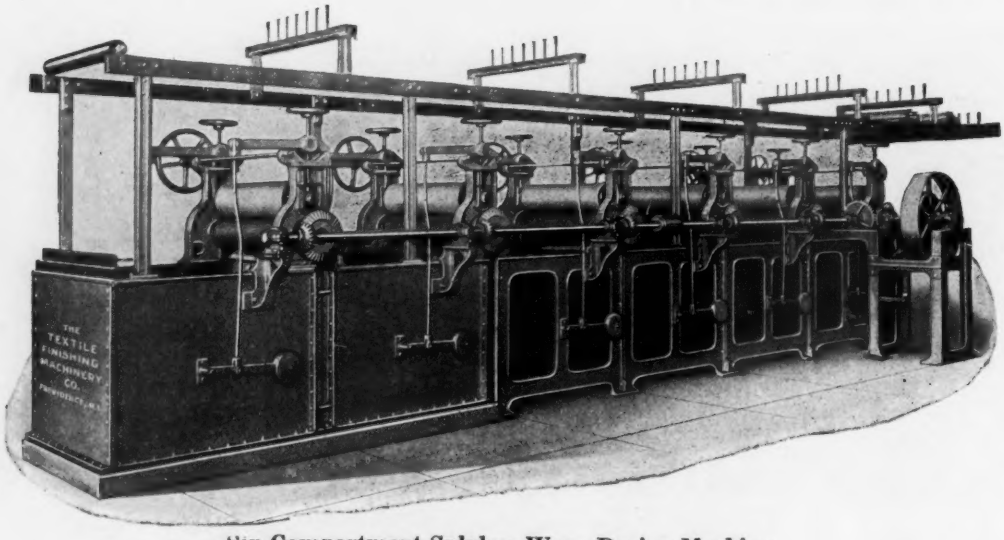

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manager, or his assistants, should supervise the collection of waste every day, see that it is weighed properly and records kept separately for each sort of waste, such as cop waste, broken cops and sweepings, commenting upon and asking the cause of excessive waste. Any weaver making excessive waste should be watched to see the cause and the faults should be pointed out and the weaver should be shown the correct methods to counteract this waste and told to immediately draw the attention of the fixer to any mechanical faults.

In rewinding cops to bobbins or tubes, some manufacturers have thought that they have found the easiest way out of the difficulty. In my opinion, it is a very expensive one, and one which costs three cents or over, per pound. This is a big item in the cost of the goods produced, and though it may pay to rewind coarse counts, in the increased length on the package, I have found that the cost for fine yarns is excessive. I am not impressed, and I think that the extra cost and capital expended on machinery could be better employed.

It would pay to employ one or two good weavers to be constantly educating the weavers in the proper handling of cops and, incidentally, in other methods employed during weaving.

It will certainly pay to rewind cop bottoms of one and half inches, that is if the waste prices were low, but if the cotton was bought cheaply and prices of yarn had risen consequently, waste would follow, then it would hardly be feasible, and again, I say there is some fault somewhere that causes such excessive waste, and it must be cheaper to eliminate than tolerate it and rewind. An average of five per cent allowance for waste is general, and it is only by closely watching and the keeping of proper records, that a manufacturer can accurately gauge the waste allowances. Otherwise, it is mere guess work, and in these days, that does not pay profits. In the spinning and weaving of cop filling the following are some of the causes of waste. that is, filling flying off:

1st. Picking stick too long, or too late from starting side.
2nd. Cops too softly built or too short in base.
3rd. Too many builder coils, starting to build too high or low at the mule or improperly placed on the shuttle peg by the weaver or badly "necked" owing to leaving the end down too long during the spinning.
4th. Check strap only partially acting or totally ineffective at the offside of the loom.
5th. Picker of unusually hard nature in offside shuttle box, or too oily and moving to and fro on the spindle when it should be at rest.
6th. Shuttle box too wide at the outer end, too narrow at outer end, too narrow at the starting handle side and too wide at offside.
7th. Shuttle pegs too small in diameter, tips too blunt or too sharp.
8th. Shuttle box set too narrow for new shuttles.
9th. Picking bowl too low.
10th. Picking too strong.
11th. Picker insufficiently gouged for the shuttle tip.
12th. Swell spring broken, too slack, weak or too strong.
13th. Dirty filling owing to oily pickers and buffers and not keeping the boxes clean.

I trust these remarks may be of some assistance, and I hope to see some other experiences.

C. W. (CANADA.)

New Automatic Tension and Let-Off.

The Franklin Machine Co., Providence, R. I., announce the manufacture of an automatic warp tension and let-off for looms. It is claimed by the markers that the tension on the warp remains the same regardless of the size of the loom beam or the number of picks being woven into the cloth, thereby preventing variations in length of the cloth for the same number of picks.

The Effect of Moisture in Waste Calculations.

EDITOR COTTON:

With reference to the questions published in a recent issue to the effect of moisture in waste calculations, it is true that cotton as received and paid for contains an unknown percentage of moisture, this varying with the source of the cotton, the atmospheric conditions at the time it was picked and the length of time it has been in storage, and a number of other factors. While the raw cotton is in storage in the original bales in the mill's warehouse, it may even gain or lose some moisture, depending upon the condition of the air in the warehouse, that is, whether dry or wet.

The man who asked these questions wanted to know, in figuring waste percentage for production purposes, whether this should be calculated on the gross received weight of the raw cotton, or its gross weight at the time the cotton is actually put into process, and whether the foregoing moisture content in cotton should be considered as a factor in calculating waste percentages for production or cost purposes; also whether it is practicable to make adjustments to eliminate the effect of this varying moisture content.

In figuring the loss in cotton in the respective manufacturing departments, a mill ordinarily takes account of bagging and ties, picker motes, card fly and strip, card room sweepings, comber noils, cut back roving, scavenger roll waste, sweeping card waste, quiller bobbin waste, seconds, and sometimes even further grades of waste, but in addition to all of these, different varieties of waste, there is one further element called "invisible waste" which might possibly be better termed "moisture waste".

There can be this invisible moisture waste or gain in each of the respective manufacturing departments, because the moisture is coming and going to and from the stock as the atmosphere is at a higher or lower regain than the stock itself.

And so it is entirely a question of how the ordinary mill figures that invisible or moisture loss. If they prefer to figure it in each department, it would run into considerable complication. On the other hand, if figured from the time the cotton arrives at the warehouse until the time the finished product leaves the mill, it is a more simple calculation, and the latter is what the mill is more particularly interested in. There is considerable variation at different seasons of the year and under different atmospheric conditions in the moisture regain of the raw cotton varies.

A series of tests on 95 samples of raw stock taken from different mills over the South showed an average of 8.93 per cent cotton regain, the maximum regain being 13.29 and the minimum regain 5.7. This you will notice represents quite a wide variation, and it would be next to impossible for the mill that bought its raw stock with 13.29 per cent cotton regain to ship its finished product with the same amount of moisture and thereby have no invisible waste.

On the other hand, the mill whose raw stock showed only 5.7 per cent cotton regain could very easily during the manufacturing processes bring the moisture up to at least seven per cent, and possibly higher and thereby show an invisible or moisture gain.

From the average of 8.93 per cent it is hardly possible to ship the finished stock with that much moisture; consequently most mills must figure some small invisible loss, based on average results.

TEXTILE MANUFACTURING

goes back to the Ptolemies

THE making of textiles can almost be called a tribe-craft. It has been handed down from parents to children through many generations. This peculiarity is shared by but a very few other industries, and it makes for closely defined methods and practices.

In an industry where shop practices have been so standardized, where operations have become so largely automatic as in the textile industry, workers grow less important as individuals, more important as a group; and measurement of individual efficiency becomes less significant than measurement of group efficiency. Group efficiency, however, depends almost entirely on the mechanical correctness of mill layout and equipment.

In a mechanically correct mill you may profitably take steps to advance the productivity of individuals, but in a mill mechanically incorrect, all such steps will be utterly wasted.

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In my opinion it is absolutely necessary to figure the loss in moisture as a part of his waste account. It truly represents a shrinkage between the purchased raw stock and the finished product, just as much as picker motes, comber noils or sweepings, and it is certainly an item to be taken into consideration when the raw stock is purchased with a considerable percentage of moisture above normal.

If the finished product could always be shipped with the same amount of moisture or regain that obtained in the raw stock as purchased, this item could be left out of consideration, but in view of the fact that the average regain in the finished product is from one to two per cent, and in some cases even greater than the average regain in the raw stock, it is readily seen that it is important indeed to take into account this question of moisture.

The only practical way of meeting this is to run the finishing departments with atmospheric conditions of temperature and humidity such that they will maintain as high a moisture regain in the stock as is practical, considering the quality of the product and the desirability of the goods reaching the customer without loss in weight.

CONTRIBUTOR NO. 4045.

Preparing Colored Warp for Weaving.

EDITOR COTTON:

In a recent issue of COTTON, "CONTRIBUTOR NO. 3040" gives the warp patterns for two pieces of colored cloth and requests that interested readers write in and tell just how they would prepare these warps from the warping of the ball to the slashing onto the loom beam.

Considering first Cloth A, of which we have the following warp pattern:

White	10	10 — to balance.
Dark Blue	2 2	
Light Blue	10	
	90x	

From the foregoing it can be easily found that the total number of ends of each color in the warp are:

White	910 ends
Dark Blue	360 ends
Light Blue	900 ends
	2170 ends

With this data at hand the warping tickets can be made out, and, together with the usual information relative to the counts and length, they should specify for the beam warper:

2 beams 455 ends — for the white
and for the ball warper:
1 chain 360 ends — for the dark blue
2 chains 450 ends — for the light blue
lease every 500 yards.

After being warped, these three chains are sent to the dyehouse, properly tagged with instructions for dyeing. Upon the return of the colored chains they are beamed as warped and together with the white beams they are ready for slashing.

The first step in slashing is the arranging of the beams in the creel of the slasher, and this is important if good results at future steps are to be expected. Fig. 1 shows a good way of arranging the five beams for this pattern. By referring to this drawing the inquirer will note that the light blue runs on top of the white yarn and that the dark blue—placed at the back of the creel—runs over a roll and meets the light blue and white yarn at the size vat.

With the starting of the slasher, to bring the yarn to the head section for counting in, tapes should be inserted at points (a), (b), (c) and (d), Fig. 1, With the yarn at the front of the slasher, rods should be inserted to replace these four tapes. Note that the rod replacing the tape inserted at point (a) separates the light blue yarn from the white yarn, the rods replacing the tapes inserted at points (b) and (c) split the sections, while the rod

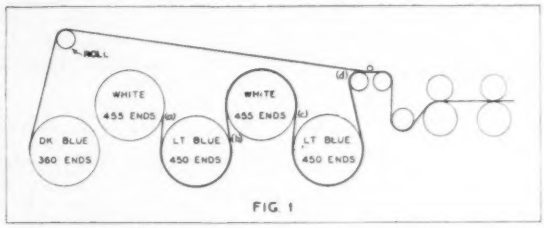

FIG. 1

replacing the tape inserted at point (d) separates the dark blue yarn from the light blue and white yarn.

Using a positive expansion comb, this pattern should be counted in six ends to the dent, and the slasher tender should be given the following warp pattern:

90x
- 6 ends white — one dent
- 4 ends white, 2 ends dark blue — one dent
- 6 ends light blue — one dent
- 4 ends light blue, 2 ends dark blue — one dent
- 6 ends white — one dent
- 4 ends white — one dent

362 dents occupied.

Before doffing the loom beams on the slasher, a tape should be inserted between the dark blue yarn and the other colors to facilitate the work for the web-drawer.

For Cloth B we have the following warp pattern:

| | | |

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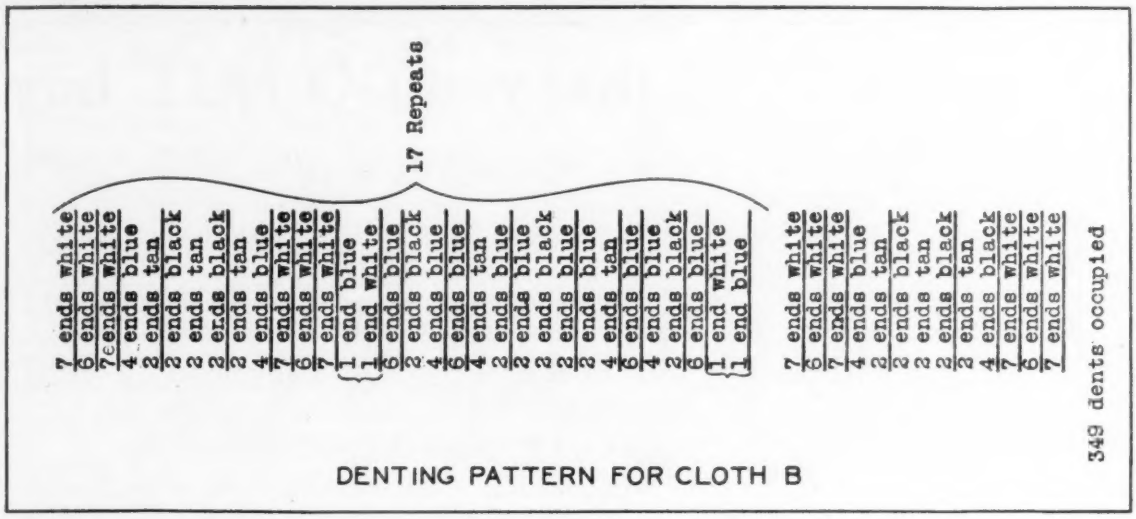

tan at the beaming process:

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chine and reducing the speed of the machine so as to take it all the time running this stock taken back to be reworked.

Care must be taken to see that there is enough cotton coming from the openers to keep all of the hoppers full all the time. This is better proven by seeing occasionally the conveyor over-run the hoppers and have an overflow at the end of this conveyor. A small bin can be made to take care of this overflow of cotton. When this is done it assures a steady flow, and the machine has enough cotton to make an even lap.

We assume that the machines in the picker room are in good condition and the breaker laps are good, but care should be taken to see that the speeds are evenly divided so as to draw the cotton onto the screens as it should and spread it evenly, all chokes being kept clean from around the screens.

In placing these laps onto the next machines it should be seen that there are two small ones and two larger ones on the aprons, and the laps, in putting them on the aprons, should always be put up at the first and third racks on the apron, that is, looking at it from the beaters. In this way, the heaviest laps will always be up close to the front or nearest the beaters. This divides the weight more evenly and nearest the drivers.

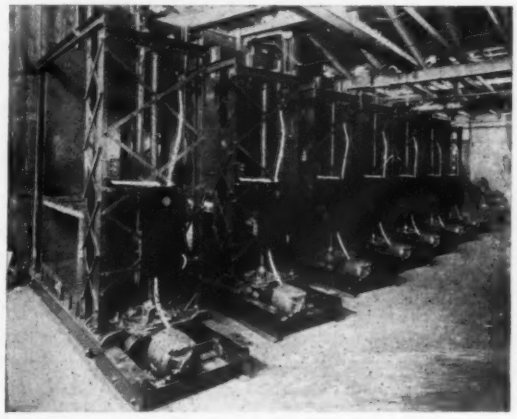
Another thing in which the writer believes is the take-up motion on the evener belts. That is a device that automatically takes up the evener belts when they become slack, thus insuring an almost positive drive of the evener belt. This in turn will help to secure an even lap, and it must be remembered, that is all, or practically all, that the writer is driving at, *an even lap.*

In reference to the cards, it must be seen that all the settings are uniform and up to the standards of settings for the required weight of sliver. Moderate speeds and weights of slivers are considered in this letter, and not the out-of-the-ordinary kind of carding of which we often hear.

It has been found, in some instances at least, that to put up seven ends at the back of the first and second drawing frames, it will produce stronger yarns. Not all can do this, so in this case take care and see that the speeds are not excessive and that the trumpets are all as near the standard as possible (same way on the cards). It should be seen that the cans have full consideration in spreading the sliver; not too close, and not too far out. This will aid in running out at the next process, and with the least interference, the least chance there is in making thin places in the slivers for weak yarn later on.

It must be remembered that the writer is aiming at evenness and tensions for stronger yarns. Now see that the top rollers are kept oiled and free from binding, so that they may act as they should on the cotton, and at all places, in the past and in the future, avoid any excessive doublings or singlings in the creeling of any of the frames. Creel as evenly as possible.

We now come to the first roving machine, where all gears should be put on as nearly as possible as required. In the beginning, the writer stated that he would give the overseer credit for having done this. On all roving frames, (slubbers intermediates and speeders), speed cuts quite a figure in the running and getting the best results. Find a moderate speed and then gear up to this tension, having the twist per inch such as the stock will allow. See that all spindles run free, with the frame lined and leveled.



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The shell rollers, as well as the solids, should be kept free from dryness. Make a practice of doffing the frames at a certain up, or downward motion of the traverse. It has been found in the writer's experience that the downward motion of the traverse gives the best results. At these points, principally, is where you first begin to set the tensions for the best results. Set them so that they will run all the way to the full doff without the tender having to adjust them. We assume that the bobbins are even enough in diameter so as not to make any material changes in the tensions. Shell rollers not running freely will handicap you in tensions. Tinkering with the cone belts after they have started on their way to a full bobbin will hurt you. In "doping" them up with some kind of belt dressing, it should neve be put on a cone belt, only at the start of the bobbin on its new sets. Better still, make a practice of "doping" them, say at the week-ends, on last doffs. In this way, they have until Monday to soak in, making them pliable for work.

Then another thing on tension is the kind of a belt you use. The writer adopted some fifteen years ago a belt that was the usual width on the outer side, but was only 1¼-inch on the inside, the outside being two inches. This gave me a contact of only 1¼-inch next to the cones. If I'm not mistaken, this belt is called the "English type", —small contact on the inside and a broad reinforcement on its outer side. With careful treatment, these belts have a record of running from two to five years; then only the inner strip of belt goes bad, and the outside can be used for repairs at other places. This belt gives the best tension of any that the writer has tried out. There are a number of belt makers making them.

After all that the writer has said concerning machinery, he has said but little. We will now go back to nature, and work a little while on this. Cotton has a nature, same as a human being, and it has to be humored; only one thing can humor it, and that is moisture; this has to be applied according to its requirements, and it is up to the overseer to determine this in relation to local conditions. In all departments it has to be considered. Warmth in connection with this moisture, plays its part. Test out and arrive at the best possible amount of relative humidity to suit your conditions and keep it that way. After all has been done that can be done with the gears and other adjustments of the different frames, together with the cotton mixings referred to in this article, the draft from the windows must be reckoned with and regulated in reason, the room being kept at the required warmth on cold days. The water in the humidifier tank must be looked after properly. If all this is done there will be very little trouble with tensions.

I have presented even mixings, machines properly cared for, ventilation and humidity as it should be kept in the rooms. Weak yarn and bad tensions have been taken care of by the proper mixings and other things that cause unevenness. Of course there are many other things one could say and many more things which one could find that the writer has not mentioned, but space and time do not permit.

Now we go to the spinning room. A little thing came to my attention sometime back. The spinner complained of the roving being weak and breaking back, and it was breaking back, but after watching closely for the cause, we found that the wood roving rods over which the roving runs in going down to the top rollers, were wearing down and the shellac was wearing off the rods. We repaired this by putting in cold roll steel rods, and after this was done the breaks were cut down to almost nothing. This had been a strain on the roving, and in part at least, caused weak places in the yarn and another cause of tension, interfering with the strength of the yarns. The usual good condition of the spinning frames exists as in the carding room, but we found by waxing the bands with bees-wax that we got a little stronger yarn; then too, we found that the whorls had become worn considerably, so we increased the size of our bands. This may not seem the proper way to some, but you know we can't always buy what we really think we should have, so it was a matter of making the best of what we had. You know how the old story goes, about the most progressive man of the day being the one who makes the best of getting the worst of it. You are in it, so get out the best way you can. Then smile.

Coming now to the spooling and warping. This is a dangerous place for yarns in connection with tensions. There are quite a few inventions on the market today dealing with tensions. Before we got rid of our old style spoolers and warpers, a fellow came to me and was showing me a tension device for the spooling, a device by which so much more could be put on the spool than with the old system. He was pretty wrathy when I told him that I was looking for something that would take the tension off the yarn instead of putting more on it, for you are doing away with that part of the elasticity of the yarn and you want to save that for the looms.

On this latest model of spooling very nearly all of the stretch there is in the yarn is saved. Hardly any tension is being put on the yarn in the spooling and warping room processes, and it is making quite a showing in the production of the looms. When you improve the running conditions of any machine you increase the temperament and contentment of the operator. This in turn, causes less labor turnover and will show a good even average monthly production. That is what our officials are looking for.

The writer has tried to show that evenness and tensions control good strong yarns, and so far, I believe in just what I have written. This has been my experience as far as I have carried it out.

CONTRIBUTOR NO. 1004.

New Cotton King Automatic Loom.

Crompton & Knowles Loom Works, Worcester, Mass., announce the development of a new Cotton King automatic loom, to be shown for the first time at the Greenville exposition. It is designed to meet the exacting requirements of versatile and high speed production, it is stated, on cotton, rayon, and similar fabrics. It has a great elasticity of operations, it is pointed out, producing fabrics ranging from fine voiles to heavy tickings—being particularly adapted to the modern pattern and texture variations of ginghams, dress goods, draperies of cottons and artificial silks, etc. The manufacturers announce it as a loom of high productivity and low maintenance, with improvements to reduce the time necessary for mechanical adjustments. Parts, made under precision jigs, and fixtures with machined surfaces, provide interchangeability, it is stated. The loom is built either with a cam harness motion or with a dobby harness motion.

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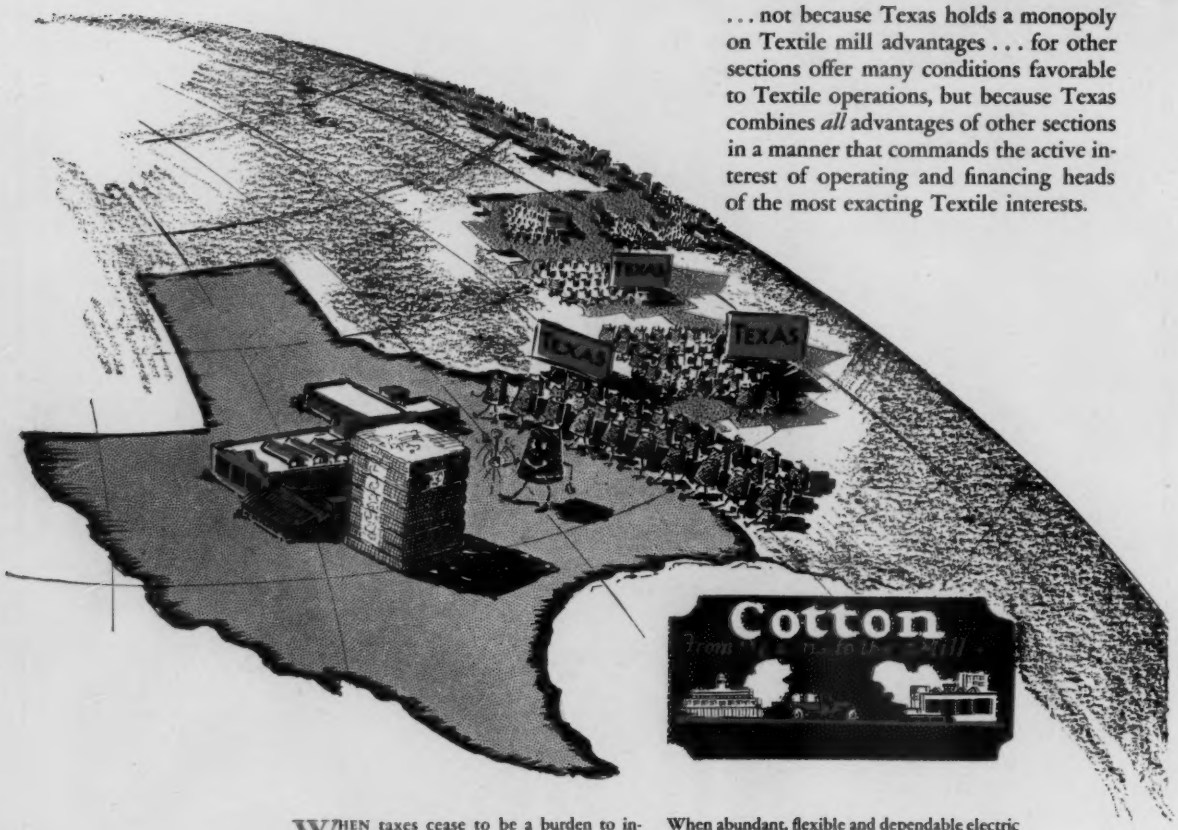

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Counting the Warp and Pick in Cloth.

EDITOR COTTON:

I will discuss the problem of counting the warp and pick in cloth, brought up by "CONTRIBUTOR NO. 4036", who wanted to know whether a count within four inches of the selvage is considered correct.

It might be stated in the first place that as wide a pick glass as possible should be used in counting the construction of a cloth. One with a two-inch opening will give more accurate determinations. Government departments and testing societies have set up standard methods of doing this work.

It is not good practice to make a count within eight inches of the selvage, due to the peculiar effect which these threads undergo in being woven. The construction of the fabric is taken as the average of five counts taken in the body of the cloth. In moving the glass for each of the consecutive counts it is best to go diagonally across the cloth in order that no warp nor filling threads will have a second count made on them. The results should be recorded and averaged as follows:

	Warp	Filling
1.	44	38
2.	44	39
3.	43	37
4.	45	38
5.	44	37
Avg.	44	37.8

V.C.(N.C.)

Jobs and Positions.

EDITOR COTTON:

Vee Martin had been out of work three months when he heard of a new mill about to be started in a neighboring city. Speeding as fast as a train would take him Vee applied at the mill for a job as overseer of spinning. He found the superintendent to whom he applied to be a boyish appearing young fellow of twenty-three or twenty-four.

"This is going to be a yarn mill, and I am going to have but two overseers, one of carding and the other of spinning, spooling, warping and cone winding," said the superintendent. "There will be 20,000 spindles, and the job will pay $18.00 a week to start. Where have you worked?"

"My last job was overseer of spinning at the Nonpareil Mill, 40,000 spindles, on 18s to 80s," answered Vee.

The superintendent seemed much impressed by this.

"What did you leave for?" he asked.

"Well, the superintendent has his brother-in-law on the job now. That's the only reason I know of for my being out of the Nonpareil. I was there three years. Before that I was at the Cuthway as overseer of spinning for four years, and before that at the Bobolink as overseer of spinning for three and a half years. I got more pay at the Cuthway than at the Bobolink and more at the Nonpareil than at the Cuthway."

"Well, I have heard of the Nonpareil. Pretty nice mill. I want this one run in the same way and want to make first quality yarns. I'll pay $18.00 a week to start up. Everything going out and nothing coming in when starting up, but after we get under way I'll pay more. The machinery will begin to come in a couple of weeks, and I won't need a man 'til then, anyway. You come around to see me then and I will decide about the job."

"All right, sir, I'll do that. Thank you," said Vee. "Pretty small pay" he thought, "but it's the best I can do now. I'll keep on the lookout for something better. This superintendent is evidently looking for something pretty nice for a little money. $18.00 a week! And if I get the job I shall have quite a little bill for moving. If the superintendent knew much he would know that in starting up, a man should have full pay. That is the hardest part. Most any fool can run a room after it has been started up for him."

Two weeks later when Vee saw the superintendent he was told he could have the job. In the meantime Vee, by a little inquiry, had found out that the superintendent was considered to be totally inexperienced in the running of a mill and that he had been put on the job through the influence of relatives well up in the mill business.

Great Scott! Here's where trouble begins, thought Vee. If this superintendent has sense enough to keep out of the mill and leave the running of it to his overseers it may not be so bad, but if he tries to run things according to how he, in his ignorance, thinks they should be run, he may cause grief a plenty. And then he recalled a remark made by the superintendent—"I am superintendent now, but shall be general manager soon."

Perhaps a man of experience is going to step into this superintendent's shoes as soon as his relatives think it time to advance him. It does not seem as if they would keep an inexperienced kid like him in charge of a mill. When he is general manager he can sit in his office and receive reports.

Sure enough, this turned out to be the case, but before it happened the young superintendent had an opportunity to show his experience, or lack of it, to a wonderful degree, causing the overseer of carding to throw up his job and Vee Martin to wish himself anywhere but in that particular mill. Many things came up almost daily to try the patience of a Job and the meekness of a Moses. If the superintendent set an outrageous spindle speed for the spinning, Vee could but mildly protest and try to explain why it would be much better to start at a lower speed.

This superintendent will think I am trying to make things easy for myself, thought Vee, after vainly trying to make him understand how the excessive speed of the spooling spindles was causing ends to break down as fast as they were tied up by the spooler girl, filling the yarn full of knots and causing a tremendous loss of production. "If these girls were on piece work instead of day pay I could not hold them five minutes," explained Vee; "they could not earn anything. You notice how the full bobbin in the holder, when tied to a spool half full or more, begins to wobble and thrash around and breaks the end? When the bobbin gets run down small, or when a full one is tied onto a spool that is less than half full, it runs without wobbling and does not break down the end. Give me a pulley that will reduce the speed to where a full bobbin in the holder, when tied to a full spool on the spindle will not wobble, and these spooler girls will turn off forty times as much work, and it will be free from knots."

This is the follow who wanted his mill run like the Nonpareil, thought Vee. This is what comes from having an inexperienced kid in charge of a mill. Just because he

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was a salesman for mill machinery is no sign that he knows anything about running a mill.

But the superintendent could not understand and would make no change; in fact, none was made until the advent of the new superintendent several weeks later. Then Vee got the pulleys he wanted, put the speed where it belonged and got the spooler girls on piece work.

Part of the production from the spinning was going onto cones and the superintendent wanted lots of humidity in the room, especially over the cone winders. Then he had large shelves built, one above another on the walls of the basement, and on these shelves the yarn from the spinning was thrown in layers, between layers of burlap; and then water from a large hose was turned on the whole mass until it was thoroughly soaked. Every two hours this was repeated until the yarn had received a two day's soaking. Then it was cone wound, packed in cases and shipped.

Of course so much wetness about the cone winding machines caused them to rust, and the soaking the spinning bobbins received made them swell so they would not fit the spindles and they had to be reamed.

Great scheme! thought Vee. This superintendent is selling water and thinks he is making money. But wait a while; I foresee trouble. Later on when yarn began to come back to the mill by the caseful, mildewed and smelling to the skies, the superintendent's rise to general manager was speedy.

REFEREE (CALIF.)

Split Laps on Whitin Combers.

EDITOR COTTON:

The problem of laps splitting on Whitin combers was brought up in the August issue by "CONTRIBUTOR No. 4049", who asked readers to give any suggestions as to the probable causes of this difficulty.

In the first place, I would advise anyone having this trouble to study the humidity conditions. If the room is too dry, it will cause the laps to split. One can readily tell by looking at the laps in the creel. If all of the laps have a ragged appearance throughout, and are continually splitting, it will be well worth while to try a little more moisture. Provided a lap is built right in the ribbon machine, the splitting from this cause can be readily overcome. It might be well to state here that a shortage of humidity can also be noted by frequent roller laps on the steel detaching roller. This is especially evident in very humid weather; the comber section becomes almost impossible to keep running through constant roller laps and split laps. An adequate humidifying system is an absolute necessity.

Second, if it is determined that the trouble is not in the humidity condition, I would suggest an investigation of the lap machines. It is usually a ribbon tender's delight to make a hard, large lap and to do so requires considerable weight on the lever. By that I mean weights in excess of those supplied with the frames. This extra weight compresses the cotton too much and gives it a tendency to stick up and split. The remedy in this case is simply to reduce the weight and size of the lap. A lap that just goes through between the creel rods and nipper stands is the right size. The weights should be as close to the band as possible; never out to the end of the lever unless absolutely necessary. Hard laps should never be made as, while they may look a little better, they run like the devil.

Provided neither of the foregoing is causing the split laps, I would suggest examining the guides just behind the rolls and the guides on the table, seeing that these are not set in too far. If this is the case, they will double the selvage of each doubler lap and this is sure to cause split laps. I would also see that the guides on the doubler are not set too close, making a ragged selvage. This tends to make the laps side-lap in the ribbon creel, thus causing one side of the lap to be thinner than the other at the points these laps roll up. The friction does not work correctly on a lap of this kind, and as a result the lap will split.

E.R. (MASS.)

The Theory of Carding.

EDITOR COTTON:

There has been very little discussion about what happens to the cotton fibers during the actual process of carding. I am going to attempt to stimulate that along this line by giving my ideas on the subject.

The objects of carding are: (1) Reducing from a lap to a sliver; (2) cleaning the cotton of as many of the impurities left by the openers and pickers as possible; (3) breaking up the small tufts of cotton and individualizing the fibers.

The first object, reducing from a lap to a sliver, is accomplished by regulating the surface speeds of the feed roll and doffer so as to draft any desired amount. For instance, if a draft of a hundred is wanted, the speeds of the feed roll and doffer must be regulated so that a point on the surface of the doffer will travel one hundred times as fast as a point on the surface of the feed roll. This is not taking into consideration the tension drafts necessary between the doffer and coiler calender rolls but merely those necessary for the accomplishment of the object.

The second and third objects, cleaning the cotton of as many of the impurities left by openers and pickers as possible and breaking up the small tufts of cotton and individualizing the fibers are accomplished in practise at the same time, therefore it is necessary to discuss them together.

The lap of cotton is fed very slowly over the nose of the feed plate to the licker-in. The rip saw like teeth of the licker-in, which are staggered across its surface so that no two consecutive teeth hit in the same place, whip through the fringe of cotton at the rate of about two million teeth for each inch of cotton delivered. This has both a cleaning and combing effect. This action is almost the same as that gotten by holding a tuft of cotton at one end and pulling a comb through it. The teeth of the licker-in whipping through the fringe of cotton while it is held by the feed roll, combs the fibers out and at the same time takes out quite a bit of trash and a few short fibers.

As soon as the feed roll turns loose the fibers the licker-in due to the shape of its teeth and its speed carries them around with it. The licker-in travels at the rate of about eleven hundred feet per minute. Due to this high speed, the fibers, which are hanging on its teeth and each other, hang off the licker along a line tangent to the circle generated by it the same as a light thread tied to the rim of a rapidly revolving pulley will hang off from it. In this position the cotton, after it leaves the feed plate, comes in contact with the mote knives which due to the

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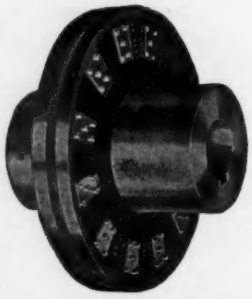

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whipping action over them remove more short fibers and impurities. The closer the mote knives are set, the more trash and fly they will remove. This is due to the fact that a longer length of fibers come in contact with the mote knife and more of the good fibers as well as short are overbalanced by the blow and drop off.

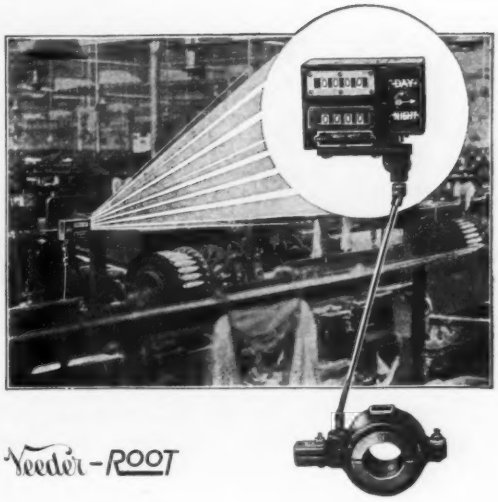
The short fibers are easier to remove than the long ones because most of the ones removed are not attached directly to the teeth of the licker-in and are too short to retain a firm hold on the rest of the fibers. Every fiber is not connected directly to a tooth of the licker-in but they are connected to the teeth of the licker-in and each other across the surface of the licker-in. Some of the short fibers are connected to the teeth or are held so firmly by the long fibers that they do not turn loose. For this reason a large percentage of the short fibers which were in the cotton before the beginning of the carding process are in it when the sliver is delivered into the can.

To get a good conception of the theory of carding it is necessary to have a mental picture of the condition of the fibers during every operation in the process. These conditions are not uniform and are different for every yard of lap fed, but the average is so near the same that they can be used in accomplishing the objects of carding. There is no fixed method of holding the individual fibers while they are being carded, at any place during the process as in the process of combing.

The fibers, after they pass the mote knives, next come in contact with the licker-in screen. They are standing out from the licker-in in the way described in connection with the mote knives. The discussion in regard to the setting of the mote knives will apply here in regard to the setting of the back of the screen. The screen is set to form a wedge shape opening between the back and the point between the licker-in and cylinder. This is to prevent any loss of fibers. If any fibers drop loose they will be caught by the screen which is set so close they will be picked up by the licker-in and carried on.

The next operation is the transfer of the fibers from the licker-in to the cylinder. This is a brushing action. The speed of the licker-in, as stated before, is about 1100 feet per minute. The speed of the cylinder is about 2150 feet per minute. The cylinder is set very close to the licker-in. The fibers are standing out from the licker-in, as explained, more or less combed out by its action before the feed roll turned them loose. The cylinder takes the fibers along with it. In transferring some of them it catches the ends standing out and completely reverses them, others are taken off straight and others are doubled back around the teeth. The parallelling action of the licker-in is lost here.

The cylinder then carries the fibers by the back knife plate which is set close enough to prevent flying cotton and far enough away to allow the fibers to stand out from the cylinder before they come in contact with the flats. The flats can be assumed to be standing still as moving them is the method used to be able to present clean flats continuously to the cylinder. It goes without explanation that the faster the flats move the more strips will be removed by them. The teeth of the flats point in the opposite direction to those on the cylinder. This means that when the cylinder passes under them, very close, as is the case, the fibers hanging on the teeth of the cylinder, standing out from its surface, will come in contact with



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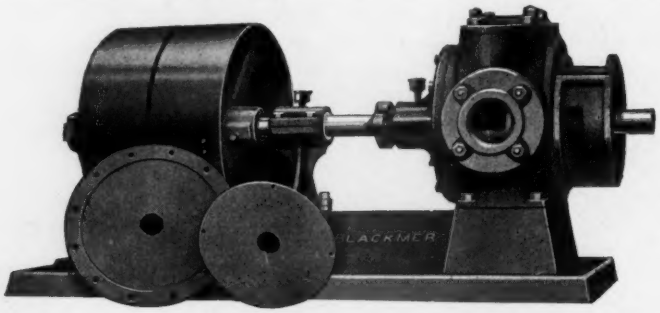

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the teeth of the flats and be combed by them. In some cases, due to neps or some condition that exists among the fibers, the hold of the flats will become greater than the hold of the cylinder and the flats will hold the fibers while the cylinder cards them. Generally the continuous pull of the rapidly revolving cylinder is enough to overcome the tangled fibers which caused the tuft to be held by the flats and it will be again transferred to the cylinders. This is just an illustration of how the fibers are during one period held by the flats while the cylinder cards and at another held by the cylinder while the flats card.

The cylinder, due to its speed, has a greater tendency to do the holding thus most of the fibers are delivered to the doffer instead of being carried out by the flats as strips. It would be impossible to picture everything which happens here. This illustration will suffice to start the imagination to work along these lines. A fiber or bunch of fibers does not necessarily pass under the flats only once but might pass under several times, determined by their condition and the way they are fixed to the teeth. The fact that fibers which are free of neps and tangles are most likely to be transferred to the doffer is taken advantage of here.

The cleaning of the fibers by the cylinder is accomplished by the neps and impurities hanging between the teeth and remaining there until they are removed by stripping.

The next operation that the fibers undergo is the separation of the flat strips from the fibers which are delivered to the doffer. The speed of the flats being constant, the percentage of flat strips removed is determined by the setting of the top front knife plate. The closer the top of this plate is set to the cylinder, the more flat strips will be removed. The reason for this is very similar to the reason that the closer the mote knives are set the more fly is removed. It just makes it a little easier for the fibers to follow the flats.

The fibers are then conducted under the front knife plates which are set just far enough away from the cylinder to allow the fibers to stand out so they will transfer to the doffer.

For the cylinder to transfer the fibers to the doffer, it is necessary for the clothing on the cylinder to be full to overflowing. This is readily seen by the fact that when a card is first started up there is a short interval of time while the cylinder is filling up that no fibers are delivered to the doffer. This also shows that practically all the work done by the cylinder is done by the points of the teeth, since the spaces between the teeth are filled with cotton.

The reason it is necessary to strip cards at intervals is that when the clothing gets full of trash and neps it prevents this carding action between the teeth and causes bad work.

The teeth of the doffer and cylinder point in opposite directions. When the fibers get around to the doffer they are hanging off the cylinder at an angle due to centrifugal force, as before explained, and due to the cylinder being full they are not attached very firmly to it. When they come in contact with the doffer teeth, where no such condition exists, they hang so firmly on them that they are removed by the doffer. This does not always happen as the teeth of the cylinder sometimes have too firm a hold on them but this can be taken as the average condition even though some of them go around and change their position several times before they are finally delivered to the doffer.

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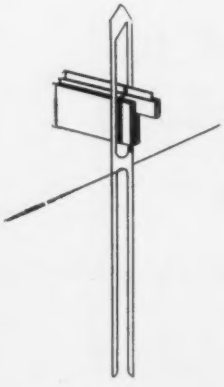

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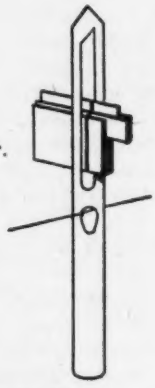

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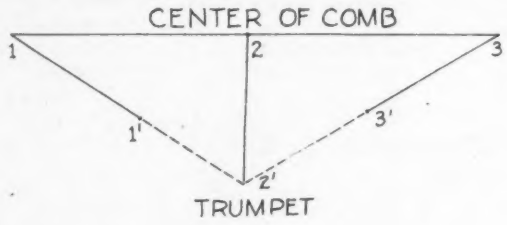
It can be readily seen from this description that the closer the doffer is set to the cylinder the better it will remove the fibers from it. It has been stated by some authorities that there is no carding action between the doffer and cylinder which is incorrect as any fibers which are not buried between the teeth of the cylinder and are held by the cylinder as it passes the doffer, will be carded by it much in the same manner as the flats do their carding. When the doffer catches one end of the fibers and the cylinder goes by it will card the other end to a small extent. The fibers laying on the teeth of the doffer are in every direction and form a web on its surface. They are carried slowly around to the comb which is set as close to the doffer as possible without touching, and this combs it off. It is then drawn through a trumpet by calender rolls and condensed. This condensing operation evens to a certain extent any unevenness which exists crossways of the lap. This can be illustrated by a simple sketch. 1, 2, and 3 represents three points on the web at the comb. 1, 2, and 3, represents the same three points on the web when 2 is entering the trumpet. 1, and 3, are considerably behind 2, though they were on the same line when combed



off the doffer. This happens all the way across the web and has a tendency to even any unevenness crossways of the lap.

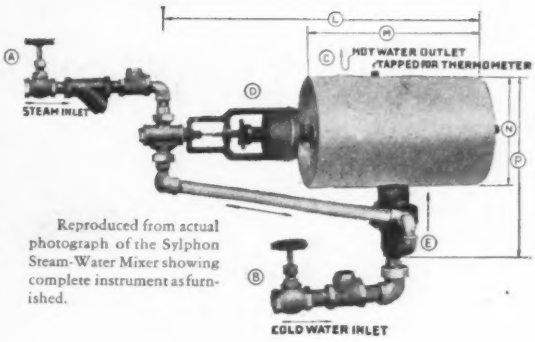
The sliver is then pulled through the coiler calender rolls and deposited in the can in spiral. One turn of twist is put in the sliver for every turn the tube gear makes. Generally this is one turn of twist for about every twenty inches of sliver delivered.

Turning back to the screen which the fibers that are not taken off by the doffer come in contact with next. The same discussion and rules which govern the setting of the licker-in screen hold good here.

The card is often thought of as being primarily a parallelling machine but this is not the case. It has been explained how the transferring of the fibers from the licker to the cylinder destroys any parallelling effect accomplished by the licker. Then during the carding action between the cylinder and flats the fibers to a great extent are hooked around the teeth of the cylinder or the flats and are delivered from this position to the doffer due more to the fact that the cylinder is full than anything else. The doffer uses "the catch as catch can" rule of removing the fibers from the cylinder and they are deposited on it laying in every conceivable position. This is the last place where any parallelling could take place so the fibers are delivered into the can in a very crossed up condition.

The primary object of the card is to individualize the fibers by breaking up the small tufts and bunches and to get them into condition to be parallelled by the drawing processes.

G. S. T. (GA.)



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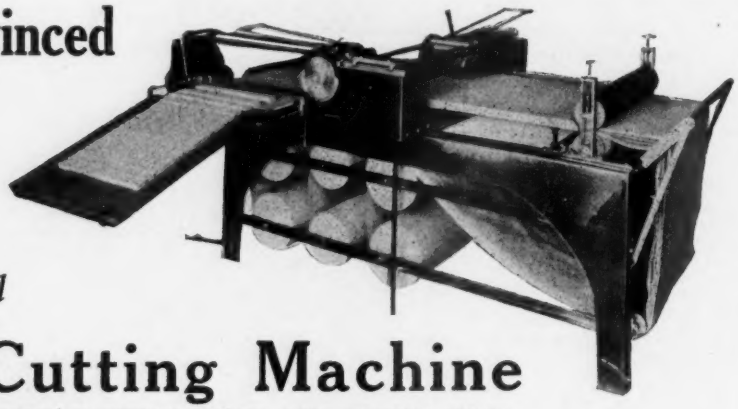

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Preventing Filling From Shelling Off on Loom.

EDITOR COTTON:

In the August issue I notice that "CONTRIBUTOR No. 4042" wants some suggestions for preventing filling from shelling off in the loom. As to his conditions, he indicated that he runs his 40-inch Draper looms 165 picks per minute, and has equipped his spinning with new 3-point cams and new cam balls, and increased the lay to 25 down fast and 88 up slow; the length of the rail traverse having been increased to 1 7/8 inches.

This is an evil that most of us have had to contend with at different times, and I will give him my opinion based on long experience with different kinds of looms, bobbins and spinning frames.

I do not think that either the make of the loom or its width has anything to do with the filling sloughing off, but I think the most prevalent cause of this trouble is the shape or style of bobbin and the way the yarn is put on in the process of spinning.

I do believe that he would get better results to run his looms one hundred and sixty picks per minute than at 165. I would recommend a 4-point cam instead of 3 on spinning frames.

If on 40s filling I would make the traverse 1 5/8-inch instead of 1 7/8-inch.

I think that I would use lay gear that would give about 16 turns or layers of yarn on the bobbin to the inch while the rail is going up, and about 54 to the inch while it is going down. This method of fast up and slow down is not common practice among spinners, but if he will try it I think that he will find it makes a better layer than the old method of fast down and slow up. When the rail is going down fast it puts extra strain on the yarn and traveler, but when going up fast it is taking up toward the delivery of the yarn from the steel roll.

I would use as heavy a traveler as possible. I like to use a filling bobbin that has little rings or ridges on it about 1/32nd-inch high, about 3-16-inch apart, beginning at the feeler line and extending to about 1/2 of an inch of the end.

There is one more little thing that I have known to give trouble, and that is a common builder chain which would not operate the traverse evenly. One concern I know discarded this type of chain and put on a flat one instead. I would have nothing but a flat builder chain, for it is important that the rail move uniformly, otherwise, there will be lap-overs on the bobbin that will ring off in the cloth.

K.A.W.(S.C.)

EDITOR COTTON:

In a recent issue, "CONTRIBUTOR No. 4042" asked for suggestions to prevent yarn shelling off of a filling bobbin in the 40 inch Draper automatic loom running 165 picks per minute. He said that he had already put new 3-point cams and new cam balls on the spinning and had increased the rail traverse to 1 7/8 inches, increasing the lay to 25 down fast and 88 up slow. He also said that the power on the loom had been reduced to a minimum and that he has 65 per cent automatic controlled relative humidity in the spinning room and 75 per cent in the weave room.

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In my opinion his traverse is long enough, and also the 25 down fast and 88 up slow motion is, or should be, satisfactory.

From the loom standpoint, I would recommend a good check strap with plenty of life, with the adjustable friction so set as to make the strap check and not give the shuttle a sudden jerk or stop. The heel spring should not be tight enough to slam the picker stick back to the end of the shuttle box. There should not be excessive tension on the binder spring and protection rod spring, as this would call for excessive power.

Then I would see that each lay end had the proper amount of leather packing in it, which I consider two thicknesses of single leather. A belt heavy enough with a good pulling face, to run the loom smoothly should be used, and I would not have the looms picking past the top center of the crank arm. I would prefer having them pick a fraction early, as this would give a smoother lick on the shuttle. The harness cams should be timed according to the picking of the loom.

The shuttle box should not pinch or clamp the shuttle, as this would call for excessive power. I would also see that the pick cam had not been ground out to produce additional power. The setting of the pick levers is important, because if they are set too low or too far forward, it will increase the power.

One important point is to see that the filling is properly handled from the frame to the loom. Obviously, it will injure it for anyone to sit on it.

As to humidity, I find a relative humidity of 85 to 90 per cent best for the weave room, and 65 per cent for the spinning should give good results. D. L. (S. C.)

BULLETIN ON EFFECTS OF HARVESTING METHODS AND WEATHER EXPOSURE ON SPINNING QUALITY

The Bureau of Agricultural Economics of the Department of Agriculture has issued a preliminary report dealing with the above subject based upon the Texas and Oklahoma crop of 1926. The report was prepared by Horace H. Willis, Cotton Technologist of the Bureau, who is also director of the Textile School at Clemson,

Each of the tests described in the bulletin is a comparative study of the harvesting methods of picking and snapping as revealed in the grade, waste and spinning quality of the cotton. Information on the effect of weather exposure and the time element in gathering the crop is also included in the study.

Among the conclusions drawn from the test carried on, is the fact that the investigations indicate that there is no appreciable difference between picked and snapped cotton in the strength and uniformity of the yarn and its running qualities; but it is shown that snapped cotton, because of the presence of more trash, is usually graded lower than corresponding picked cotton.

"COOLING DATA AND OTHER INFORMATION"

Under this heading, Power Plant Equipment Company, 1737 Walnut Street, Kansas City, Mo., have issued a booklet containing a complete description of the Marley spray cooling equipment, giving sizes, capacities, specifications, etc., on the Marley spray nozzles, spray group tees, cooling cones, flanged and tapered pipes, etc. In addition to this section, however, the booklet contains considerable general engineering information of direct interest in connection with spray ponds. Layouts of typical spray ponds are shown, as well as charts and tables covering general subjects, such as the relationship of steam and water temperatures and steam condenser work, the water quantities required, psychrometric information, etc. A chapter discusses means for eliminating algae in spray ponds.

Copies of the booklet may be secured upon application to the company by any manufacturer or engineer interested.

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Only efficient tapes can create economy —tapes that possess those inherent qualities of strength and long life. Barber Spinning and Twisting Tapes are the most economical on the market—evidenced by the number and character of the mills using them exclusively.
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Try a GARLAND Standard Grade LOOM HARNESS
No better looking, better weaving or better wearing loom harness can be made than those we are turning out. The best materials, great care in manufacturing and rigid inspection from the knitting to the finished harness are bound to produce harnesses of superior quality.
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WASHBURN WOOD TOP ROLLS

Fit your spinning frame, without change to cap bars or saddles. Made of wood, steel and felt with an outer layer of sheepskin which maintains a delicate tension and more resiliency, and this with weighting eliminated.
A DEMONSTRATION FRAME will be in operation. See it and get the details on regular and LONG DRAFT SPINNING.

Kore-Lokt pin or quill boards are different in this respect. The pins cannot come out. They are securely locked to a light-weight, moisture-proof base, which means many extra years of usage without replacement. See them!

KORE-LOKT

PIN BOARDS

4

WASHBURN ITEMS YOU SHOULD SEE AT THE SOUTHERN TEXTILE SHOW

Booth A-220, 2nd Floor, Temporary Annex

THE Washburn organization will have a display at the show of especial interest to far-sighted textile executives who seek the answer to mounting costs and decreasing production. At the Washburn booth you will find a Whitin Spinning Frame in operation demonstrating LONG DRAFT SPINNING with Washburn Wood Top Rolls and, in attendance, a Washburn representative who understands "mill language." See this demonstration and ask for Test Cards showing long draft results under mill conditions. The new High Speed Warper Beam will interest you—be sure to see it. No high pressure salesmanship will be brought to bear, but we do want YOU to call because we believe it will be to YOUR advantage.

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IF IT'S ROLLS, WE MAKE THEM

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WASHBURN HIGH SPEED BEAM

More effective on both standard and high-speed warping. Always absolutely concentric and in balance. A light-weight beam that withstands strains of sudden stop motion. Every feature is a striking improvement—the latest is a brand new tensioning device for wooden heads. Don't fail to see this Beam.

For cord fabric shipping and ball warping, for use in bleacheries and finishing plants. Made of Whitewood or Northern Pine and have a patented flanged galvanized ring for end protection. At the show.

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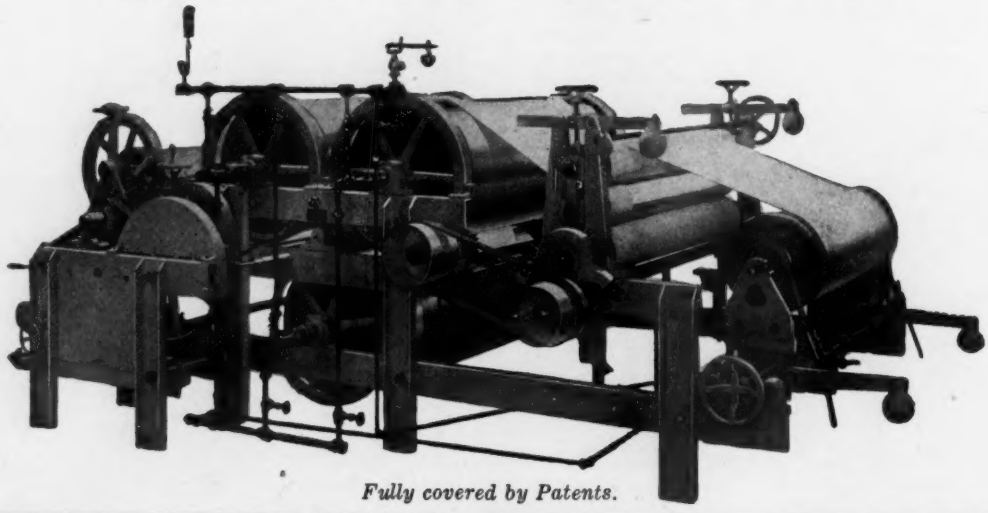
THE JOHNSON WARP-SIZING MACHINE

Used by the Leaders in the Trade for

SIZING RAYON, CELANESE, and SPUN SILK WARPS



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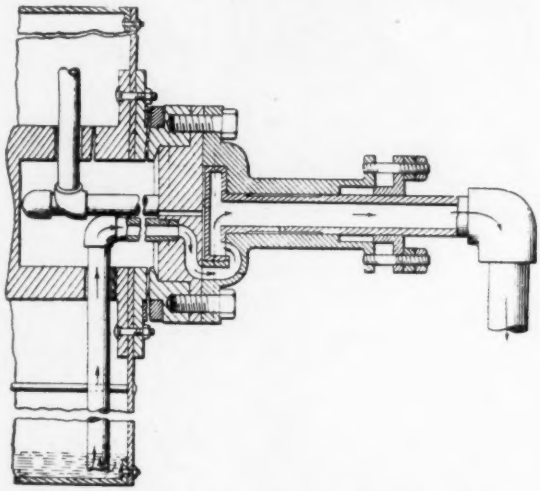
New System for Draining Slashers.

The Saco-Lowell Shops, 147 Milk Street, Boston, Mass., announce the adoption of the Atkins rotary syphon system as standard equipment for their slashers. The company states that this system continuously forces all water and air from the cylinders by internal steam pressure, and so eliminates all drainage by the old bucket method.

This system consists of three pipes of standard size which lead from the inner circumference of the slasher cylinder through the central shaft to a flat steam slide



Cross-Section, Atkins Rotary Siphon System.

valve located on outside end of slasher shaft. These pipes terminate close to the inner surface of the cylinder about 120 degrees apart and turn with the cylinder.

The company explains that as the cylinder revolves and one end of each pipe nears the bottom, the opposite end passes a port in the steam slide valve which opens communication directly with the atmosphere. Further revolution of the slasher cylinder closes this port and opens the next one, thus making the cylinder drainage complete and continuous. It is explained that no traps are required as the steam slide valve functions as a substitute.

New DeVilbiss Spray Gun.

A new and improved spray gun, for finishing and painting work, etc., has been introduced by The DeVilbiss Company, Toledo, Ohio. This gun is known as Type AV, and the company states it has embodied in it the best points of the company's developments over a period of years. A new feature is a spray head with graduated adjustment, controlling both the character and width of the fan spray. This makes possible a quick return to a previous setting for producing any desired spray. The air can also be cut off, producing a round spray. It is pointed out that the adjustable spray head was designed to eliminate split sprays and "oversprays", and to insure proper balance between the amount of material used, the nature of the work and the speed of operation. The nozzle parts of the gun are self-centering, it is pointed out, for preventing their getting out of alignment. The DeVilbiss detachable spray head construction is retained in the new gun; and additional interchangeable spray heads with nozzles of various sizes, and a spray head without the adjustable feature.

Better Lubrication at *Less Cost* per month

OIL Under Machines

means wasted lubricant and lessened protection against frictional wear.

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due to our exclusive process that makes it extremely adhesive—so keeps off goods in process.
. . . . and NON-FLUID OIL, because of its high lubricating qualities, keeps bearings *continuously* protected against frictional wear.
All this at less cost for lubrication—
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For better Concrete
High Test Concrete at Lower Cost
High Strength! A designed mix with basic slag consistently produces concrete a full third stronger than building specifications. A designed mix with
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consistently . . . the cost . . . for basic Slag concrete weighs 300 to 600 lbs. less than any other concrete aggregate. A saving, in freight alone, of 10% to 25%.
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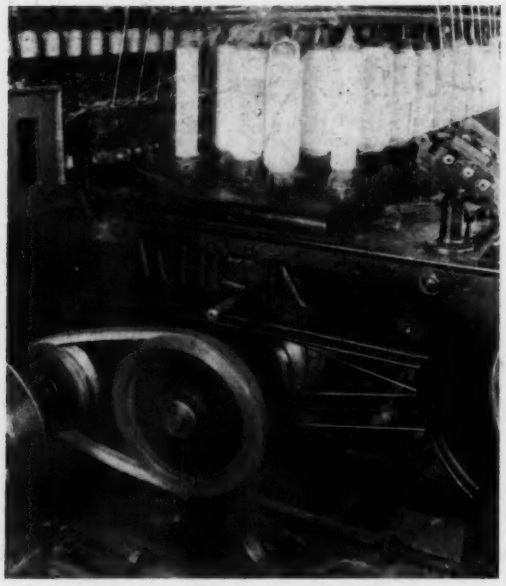
A Single V-Belt Drive Application



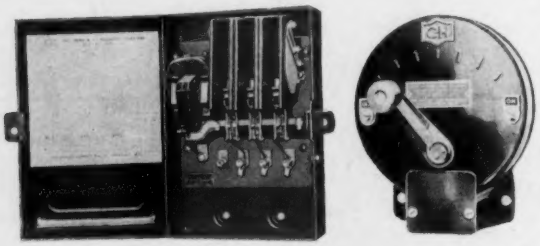
The illustration used above shows a new type of single V-belt drive applied in a prominent North Carolina mill on a Whitin spinning frame. This belt is produced by L. H. Gilmer Co., Tacony, Philadelphia, Pa. The V-type of belt has been a center of much interest in recent months. It is explained by the manufacturers that with this type of belt there is secured a smooth start; a drive with silent, shock-absorbing features, with no necessity for oiling.

A Machine for Cutting Roller Cloth

A new machine for cutting roller cloth, for use in roller covering shops and in mills doing their own roller covering, is being marketed by Hughes-Kretzschmar Manufacturing Co., Waco, Texas. This machine, known as the H-K cloth cutting machine, is shown in the accompanying photograph. It was invented by W. L. Moss. One operator is required, the company states, and the machine has a capacity of 100,000 cloths per day. The construction and operation is simple; it requires two ¼-hp. motors, with the cutter blades mounted on the motor shafts. The machine is creeled by inserting the creel rods through the roll of cloth and placing the creel under the machine. The cloth passes to the rear of the machine through a comber, then between rolls which grip the cloth, packing and delivering it to a belt which conveys it to a stripping blade. As the strips pass from the stripper they slide upon a metal sheet elevated just above the rollers on the blocker; by lowering this sheet the strips are conveyed to the blocking blade by these rolls. As the strips are blocked they pass upon a sloping metal sheet, as shown in the illustration at the right of this page.

Two New Cutler-Hammer Products

A complete new line of A.C. magnetic contactors, designed especially for controlling lighting and power circuits automatically, and for miscellaneous applications, is announced by the Cutler-Hammer Mfg. Co., Milwaukee, Wis. High efficiency hammer head type magnets with self aligning armature, continuous duty magnet coil, hardened steel bushings, tin dipped solid copper contacts, magnetic blowouts and chimney type arc shields are some of the outstanding features. The contactors have the magnet frame supported on a spring



Left, New Magnetic Contactor; Right, the D. C. Regulating Rheostat.

plate to absorb the shock of the magnet on closing. A wide variety of types and sizes are available to fit any need. The contactors are supplied mounted in a split enclosing case or on a slate panel for switchboard mounting.

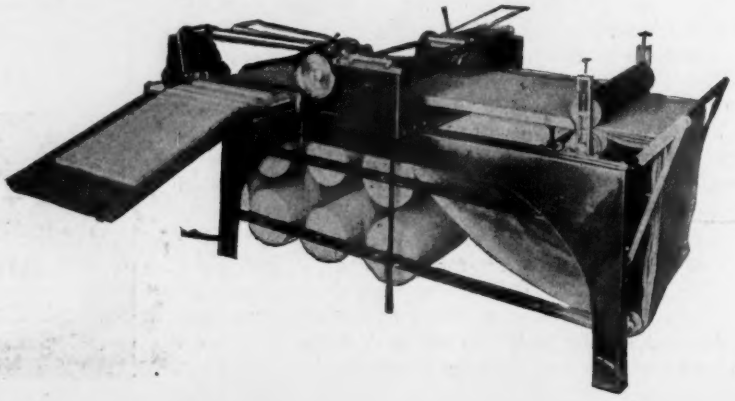
Another product announced by Cutler-Hammer is a new direct current regulating rheostat. This new rheostat can be used to control the speed of fractional horsepower motors. The device is of the circular plate type, completely enclosed. It is small in size to permit mounting directly on machines or in any out-of-the-way place. A small, neat-appearing enclosing case with an outside operating lever protects the unit and prevents accidental contact with live parts.

NEW PIPE FABRICATING PLANT IN ATLANTA

With the occupancy of its new plant at 322 Highland Ave., N. E., Atlanta, Ga., the Seeley-Peteet Pipe Fabricating Co., is prepared to weld and shape piping up to three feet in diameter, it is announced.

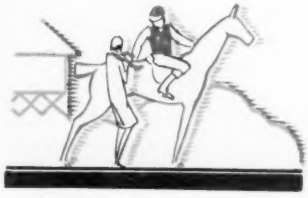
The new plant is a two-story structure, 50 x 115 feet. The top floor is to be used by the engineering and sales departments and the first floor is to be used by the fabricating department.

The plant has complete equipment for fabricating materials required in power plant installation, heating, plumbing and industrial plant installation. It is equipped also for all kinds of oxyacetylene welding, special welding of headers, receivers and pipe coils for the manufacture of pipe bends and coils, expansion bands, flanged piping headers and fittings and the like. An engineering department has been established and equipped to make accurate surveys of the requirements of customers and to furnish detailed estimates covering the cost of materials and installation.



Knitting Section

SPIRAL FLOATING
STRIPING MACHINE
BUILT INTO MODELS
HH – K – B



FANCY EFFECTS *are the* VOGUE

THE new Spiral Floating Striping Machine meets the manufacturing requirements of smart fancy hose. The effects are produced by the well known floating stitch system. The horizontal striping mechanism can be arranged to control either the facing yarn or the backing yarn.

The advantages of this new machine are increased through the fact that it is built in sizes 3 inches up to 4 inches in diameter. It can be equipped with as many as six yarn changing fingers, which gives a range of five different colors under control of the pattern mechanism, exclusive of heel and toe colors. Plain stockings can be produced by throwing the fancy effects out of action.

Established 1865

SCOTT & WILLIAMS

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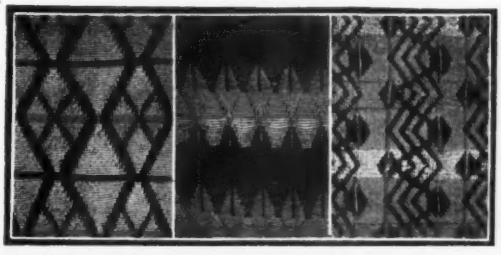

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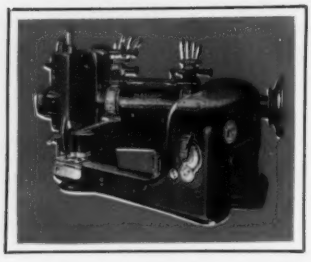
The Seam that Circles the Globe

SALES of Rayon garments are accelerated by giving them a beautiful finish. In fact, to do otherwise is to discard or ignore the advantage of Rayon's possibilities.

For this purpose the Flatlock is the ideal machine. Manufacturers here were quick to recognize this. Their good judgment has been amply confirmed by foreign manufacturers.



The value of the Flatlock is further emphasized by its success on men's Rayon undergarments.

Your Rayon production, both women's and men's, will react profitably to the beauty of the Flatlock Seam.

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Write our Home Office for samples made on the Flatlock, or submit your own fabrics for sample purposes

PAYING the Mill Operatives to THINK

How to Induce Suggestions from Workers to Improve Product and Conditions, and Rewarding Them for Doing So

By Joseph M. Schappert
Assistant Works Manager, American Schaeffer and Budenberg Corporation, Brooklyn, N. Y.

BECAUSE of the current interest displayed in the use of suggestion boxes in knitting mills, and an apparent lack of established practices of this kind in the industry, this article is reprinted from the June 1928 issue of "Factory and Industrial Management." It gives a clear outline of how this idea is applied in a plant in another line of manufacturing; but should contain much of interest and help to the knitting mill contemplating the installation of such a system.—The Editor.

WHERE a successful plan is in use to reward the workers for suggestions that improve production operations, or for any other factory work, the value of the idea is recognized. Its importance will be questioned by the manager who allows his plant to be backward in production operations, by management that has tried a system which has failed, and by one approaching it for the first time.

The number of firms employing some method of reward for suggestions from workers is rapidly growing. The plans used are based on three fundamental principles: To secure ideas valuable in the actual conduct of the business; to arouse greater interest on the part of the men and to secure a fuller measure of cooperation; and to train men to think constructively along management lines. The value of the suggestion as coming from the worker lies in the belief that the person closest to the actual product and its manufacture is the logical one to suggest improvement. A system which supplies an incentive and stimulates workers to submit ideas of betterment is highly desirable.

One set rule will not succeed in all types of business, but certain factors must be considered in any system.

In the first place workers should know generally what kind of suggestions are wanted: they should have help when an idea comes to them.

Printed Forms Are Supplied.

We supply assistance for both needs through a printed form, which is especially supplied to make the employee's task easy. On one side of the employee's suggestion form lists subjects on which suggestions are desired, and on the other explains how the suggestion form is to be used and sent in. This step is necessary because it is difficult for most workers to start the first word, and an awful task if they have only a blank paper and a pencil with which to start. Some firms may need a more elaborate form, but simplicity is a virtue here greatly to be desired. In any event, a printed form as a starting point is highly desirable.

These printed froms are distributed throughout the plant in containers specially marked "Suggestion Boxes". In addition to the forms containers hold supplies of envelopes addressed to the head of the suggestion committee. These details give the worker the convenient means of conveying his idea to the suggestion committee; and the containers are daily reminders of the desire management has that suggestions be submitted.

On the suggestion form is a perforated coupon, easily detached. Each form and its coupon carry the same serial number, and suggestions are filed by numbers, not names. By the number system suggestions are ruled upon without regard to personal influence or prejudice.

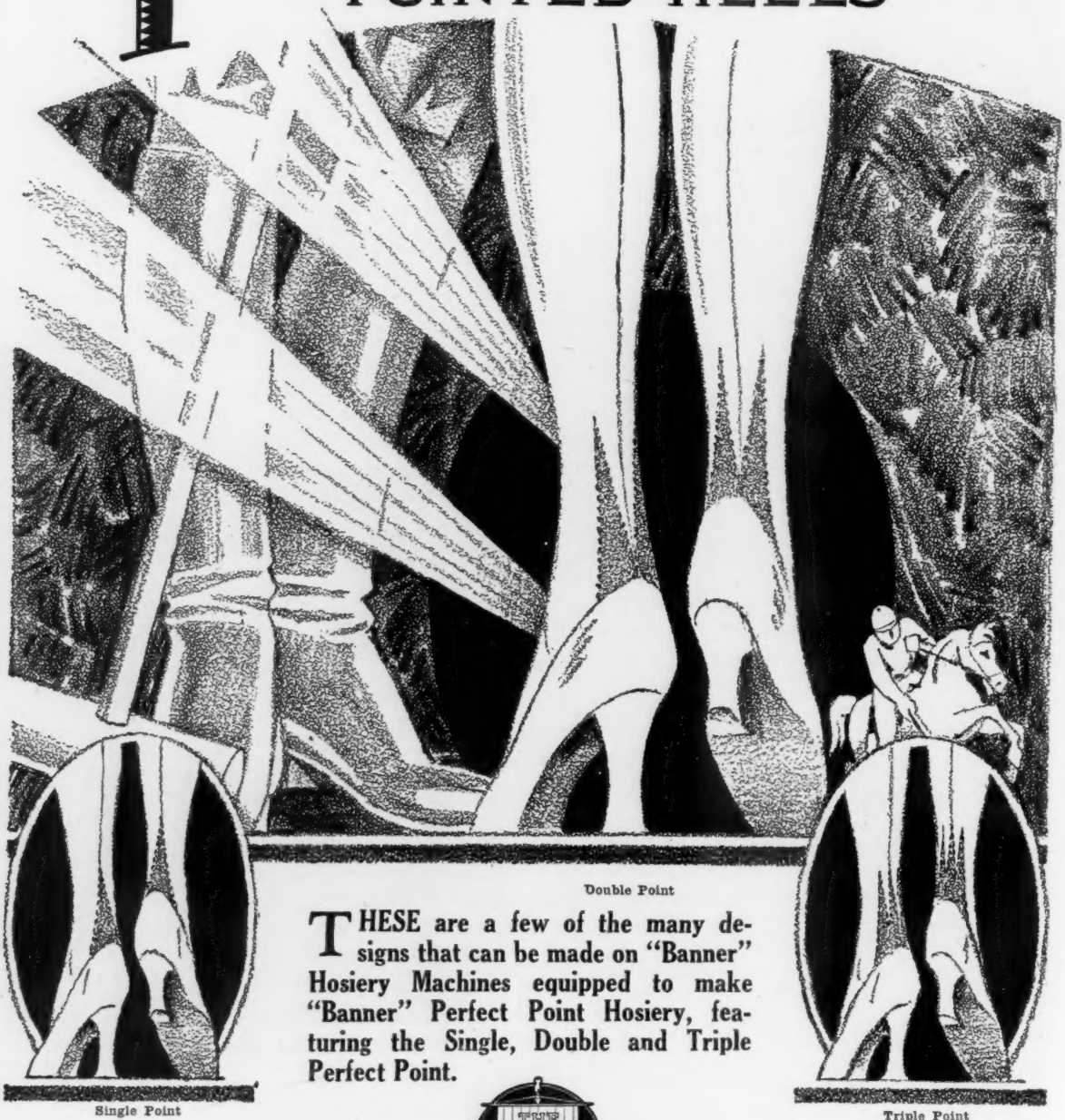
The name of the suggestor, though not appearing on the suggestion card, is noted on the coupon which the suggestor keeps. By using the numbering system the worker has no hesitancy in sending as many ideas as come to him without fear of embarrassment, or without the fear that he may be stepping on someone's toes. The number plan also eliminates any possibility of favoritism should one man receive an outstanding number of prizes. Suggestions

Printed forms are placed throughout the plant in specially marked containers.

are recorded and controlled through all stages by the numbering system.

After the form has been detached from the coupon it is put in an envelope provided for the purpose and dropped into the suggestion mail box, which is opened at least once a day. Suggestions are then delivered to the suggestion committee recorder. The date and time are immediately entered on the register and the suggestion is read by the recorder. As the reading indicates the executive of most direct concern the suggestion is sent to him for preliminary recommendation. The record of such routing is also kept by the recorder.

PERFECT
POINTED HEELS



Double Point

THESE are a few of the many designs that can be made on "Banner" Hosiery Machines equipped to make "Banner" Perfect Point Hosiery, featuring the Single, Double and Triple Perfect Point.

Single Point

Triple Point

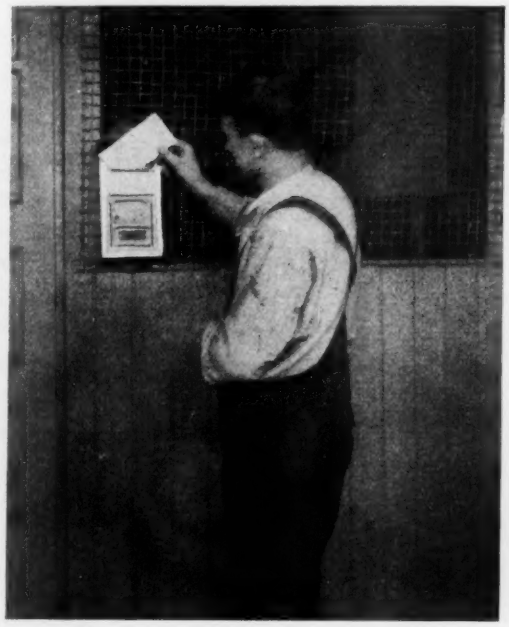
HEMPHILL COMPANY
MAIN OFFICE *AND FACTORY*
PAWTUCKET RHODE ISLAND

New York Sales and Show Rooms
93 Worth Street, New York

Philadelphia Sales and Show Rooms
Heymann Bldg., 213 S. Broad St.

Southern Offices
James Bldg., Chattanooga, Tenn.
Commercial Bank Bldg., High Point, N. C.

After some preliminary recommendation has been made the suggestion is returned and the recorder, after making the proper entry, passes the suggestion to the secretary of the suggestion committee, who lists it. Then at monthly or bimonthly meetings of the committee all suggestions are voted upon. The committee usually consists of a vice-president, works manager, chief engineer, sales manager, chief



"The employee puts the suggestion in an envelope provided for the purpose and drops it into a mail box which is opened at least once a day."

designer and planning and shop superintendents. When a decision on the suggestion is made it is returned to the recorder for final action, and a record is kept of the final disposition, the time of receipt at the recorder's office, and other pertinent data.

Notice of the disposition of each suggestion is posted semi-monthly on a suggestion recorder which is posted on each bulletin board throughout the plant.

A worker holding a winning coupon sends it in in the same routine way as that in which he files the suggestion itself. The recorder authorizes the amount of the award on the face of the coupon and the coupon is sent direct to the cashier who forwards a check to the winner. In case the prize-winning suggestion needs further attention to make it workable it is returned by the recorder to the secretary of the committee who issues the necessary orders through the regular channels and keeps a follow-up check until the benefits from the suggestion have been started. The suggestion is then returned to the recorder where it is filed according to the subject referred to, in the suggestion file.

Each suggestion recorder issued is different from the preceding one. We alternate the color of the paper—at the beginning of the month the color is yellow, at the half-month blue. The change is at once apparent.

The body of the suggestion recorder put up on the bulletin boards shows the suggestion number, the date received, and the disposition of the suggestion. A closing paragraph reviews accomplishment and aims to inspire the worker to renewed effort. Where there is no award, the reason is given. Employees look forward to this fortnightly publication. And it is posted regularly. No delays or omissions are allowed, for it is due the men to let them know what disposition has been made of their ideas.

The suggestion plan has done much for us. We are on the upgrade but we have not received as many suggestions as we would like to get. From suggestions received we have made many improvements, which, in many instances, would not have been made without the plan we use.

Here are a few suggestions which we considered acceptable, and for which awards were made:

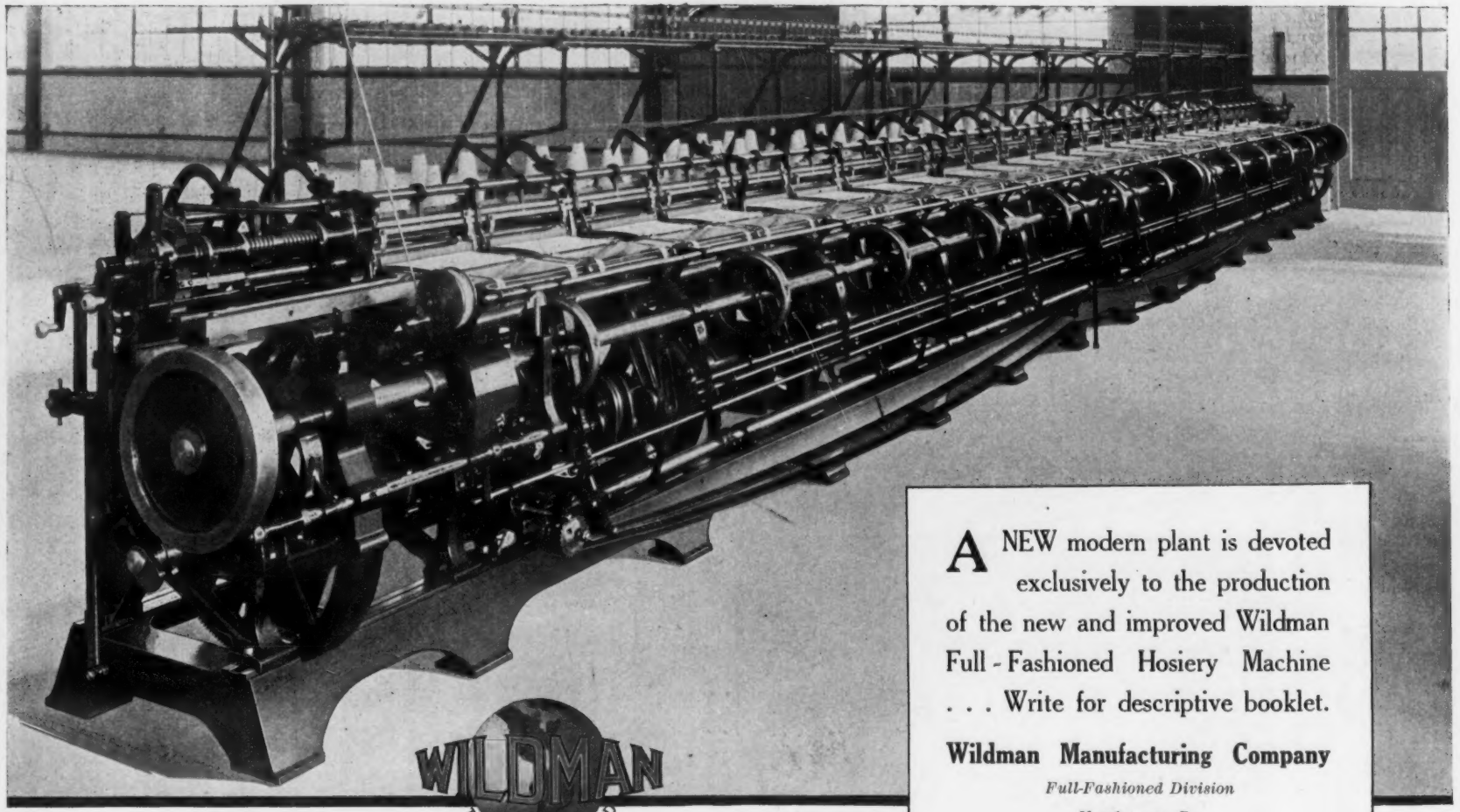
1. Suggestion No. 24—Suggested the placing of identifying symbols on the backs of gage dials to indicate the kind of material and finish used in gage-diaphragm springs. It was suggested that these numbers would prevent supplying material of incorrect kind and finish, would assist the inspector of repair goods in telling the servicing the gage was used to, and would save considerable time in looking up old orders or in writing to the customer for this information. This suggestion was awarded $10.00.

2. Suggestion No. 170—Suggested that, to reduce leaks of certain instrument connections we insert tubing in a special manner in the connection and then weld it, instead of welding it to the end of the connection, as was done formerly. This recommendation was first tried out, and the suggestion then was awarded $5.00.

3. Suggestion No. 275—The suggestor indicated that on certain types of gage the patterns provided no bosses. The result was that the bosses were laid out on patterns for new castings. The use of washers and a milling operation were thus eliminated. Five dollars was awarded for this suggestion.

"The suggestion record posted on the bulletin boards shows the suggestion number, the date received, and the disposition of the suggestion."

As an index of the system's worth it has been found that the more cash awards we are able to make, the larger is the number of suggestions which immediately follow. Some of the suggestions submitted have had previous attention; either they have been rewarded or they have been considered and rejected. The main thought is, however, that the suggestion idea keeps workers thinking. They have something definite to shoot at when an idea comes to them that may mean betterment. Their minds are pointed to-



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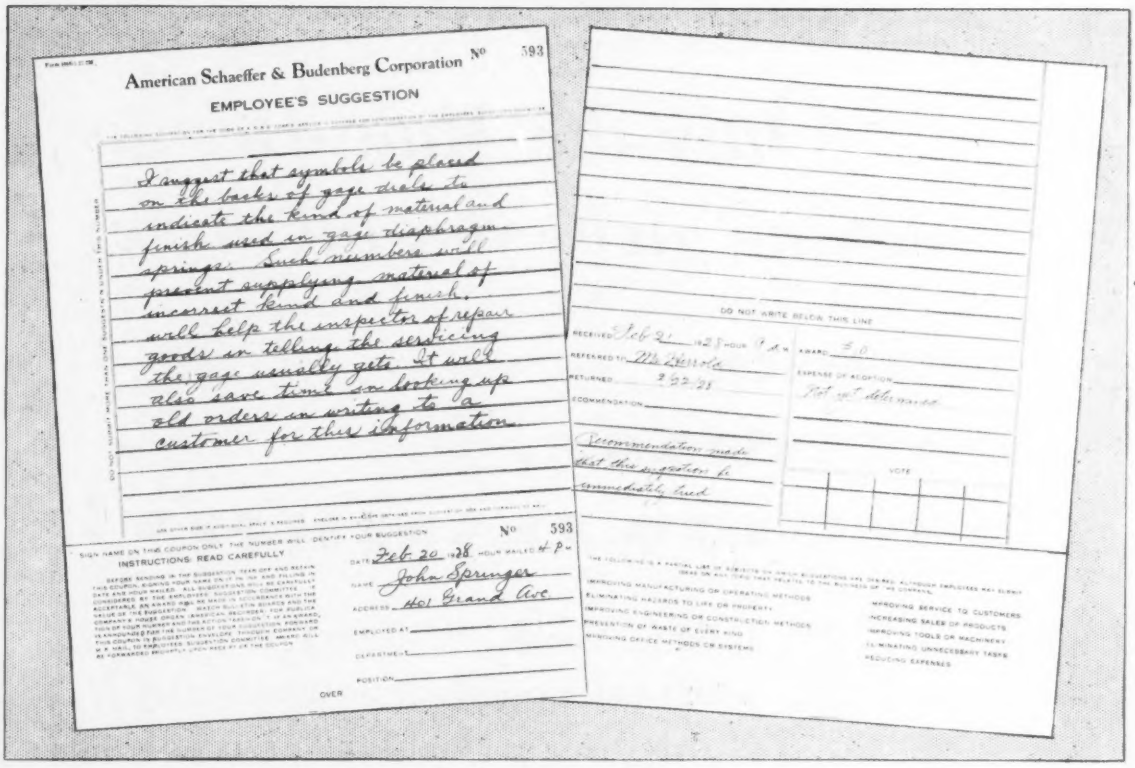
Full-Fashioned Division
Norristown, Pa.

WILDMAN
FULL-FASHIONED HOSIERY MACHINE


American Schaeffer & Budenberg Corporation No 593

EMPLOYEE'S SUGGESTION

I suggest that symbols be placed on the backs of gage dials to indicate the kind of material and finish used on gage diaphragm springs. Such numbers will prevent supplying material of incorrect kind and finish. will help the inspectors of repair goods in telling the servicing the gage usually gets. It will also save time on looking up old orders on writing to a customer for this information.

INSTRUCTIONS: READ CAREFULLY

No 593

DATE Feb 20 '28 HOUR MAILED 4 P.M.

NAME John Springer

ADDRESS 401 Grand Ave

EMPLOYED AT

DEPARTMENT

POSITION

OVER

DO NOT WRITE BELOW THIS LINE

RECEIVED Feb 21 1928 HOUR 9 A.M. AWARD $ 0

REFERRED TO Mr Herrold EXPENSE OF ADOPTION Not yet determined

RETURNED 2-22-28

RECOMMENDATION

Recommendation made that this suggestion be immediately used

VOTE

THE FOLLOWING IS A PARTIAL LIST OF SUBJECTS ON WHICH SUGGESTIONS ARE DESIRED, ALTHOUGH EMPLOYEES MAY SUBMIT IDEAS ON ALL ITEMS THAT RELATE TO THE BUSINESS OF THE COMPANY.

IMPROVING MANUFACTURING OR OPERATING METHODS

ELIMINATING HAZARDS TO LIFE OR PROPERTY

IMPROVING ENGINEERING OR CONSTRUCTION METHODS

PREVENTION OF WASTE OF EVERY KIND

MINIMIZING OFFICE METHODS OR SYSTEMS

IMPROVING SERVICE TO CUSTOMERS

INCREASING SALES OF PRODUCTS

IMPROVING TOOLS OR MACHINERY

ELIMINATING UNNECESSARY TASKS

REDUCING EXPENSES

"Workers should know generally what kind of suggestions are desired. We supply that need through a printed form which gives a list of subjects upon which suggestions are desired, and how the suggestion form is to be used and sent in."

ward constructive thought, and when men are busy improving things something big is bound to come of it.

In paying for awards we try to measure the actual value of the suggested betterment and to scale the awards accordingly. We have no fixed system of prizes. Ideas may be presented upon which no measure in money can be placed. In such cases an arbitrary sum is named. Prizes which we have distributed range from $1.00 to several hundred dollars.

In summary, we believe that our plan succeeds because it has the confidence of workers as it is reasonable and prompt in reporting and awarding suggestions; requires a minimum of executive time consistent with careful attention; includes the features necessary to keep enthusiasm alive; and provides an incentive for constructive thought.

In our experience, each one of these factors is highly necessary to the successful operation of an employee's suggestion plan.

Recommendations for Standard Hosiery Lengths

The National Association of Hosiery & Underwear Manufacturers recommends the adoption of the following new standard lengths for full-fashioned hosiery:

Size	Length
8 8½	27 inches
9 9½	short—29 inches
10	long—29 inches
10½ 11	29 inches

These recommendations follow full consideration of the subject by the Association's Research Department. Because of the short skirt vogue, a demand for extra lengths in women's full-fashioned hosiery has been created. This demand, it is obvious, has been exaggerated, and, in addition to creating difficulties for women with short legs, has placed unnecessary hardships upon the manufacturer.

The Association believes that the standard lengths printed herewith will be satisfactory both to wearer and manufacturer.

The address of the Association is 334 Fourth Avenue, New York City, where further details may be secured concerning these recommendations.

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PATTERNS...

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Infants' socks, children's hose or men's half hose made on the Fidelity Multi-Design Machine, give you more than color, more than pattern. They give you a True-Rib fabric whose elasticity can be matched on no other circular knitter in the world today... And as every manufacturer knows, the True-Rib effect tells, not only in the looks and the style of the hose, but in the service and satisfaction it gives the wearer.

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Warp Loom Fabrics—*By William Davis, M. A.*

Many Manufacturers Are Finding Some Interesting Possibilities In Variation In Design In This Work

THE PRODUCTS of the warp loom are being used more and more for knitted productions in a large variety of ways, particularly in relation to outer wear for ladies. During the present season, this texture is found in variety, for example, in what are known as three piece suits, in blouses and in dress goods, while other lighter textures are made into knitted scarves which are printed with all the skill of the printers' art.

It would seem that many manufacturers have difficulty in creating new designs as and when they are wanted, as the knitting industry itself does not produce the type of designer for this work. So patent has this lack been in many cases that makers of woven goods have taken up the industry with good success, because they had already their staffs of suitably trained designers who were able to adapt themselves to the new medium and create designs not the same as woven goods, but along similar lines, taking into account the limitations and also the advantages of the warp loom principle of fabric production. In this sketch an attempt will be made to outline some basic principles of warp loom design, where a definite ground is taken and where the object is to show the manner in which new designs can be originated and developed. It will be seen possible to draw out beforehand the exact effect of any combination of color laps and to portray these on design paper in such a way as to afford a replica of the design as it will appear in the loom. When new workers take this fabric in hand, they are always calling for more and more links and chains for new productions, ignoring the principle that it is good practice to exhaust all the possibilities of each set of tackle before reaching out for new schemes. The warp loom under consideration in those designs is known as the Raschel type where two bars are set at oblique angles to each other and these are provided with latch needles which are fixed side by side in the bed. These bars move alternately in a body in the machine, the knocking over of the stitch being effected by the aid of a slide which is fixed in position so that the loops rest on its edges as they are being drawn through. Fig. 1 shows a pattern worked on this machine where two guide bars are used and each bar is threaded alike with eight threads of black alternating with eight threads of white. The two

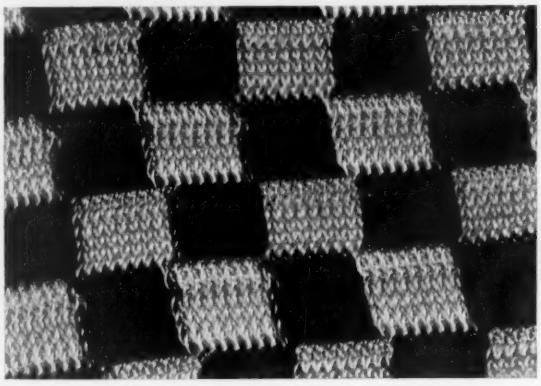


Fig. 1.

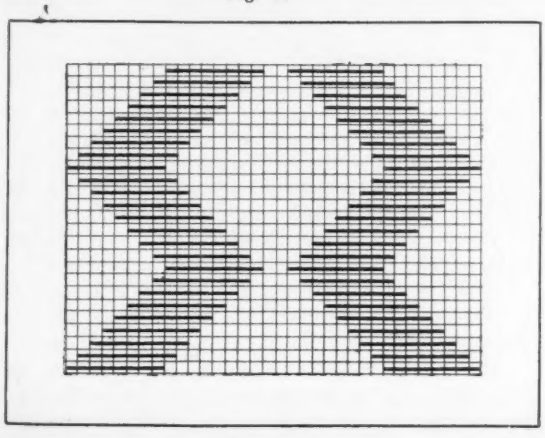


Fig. 2.

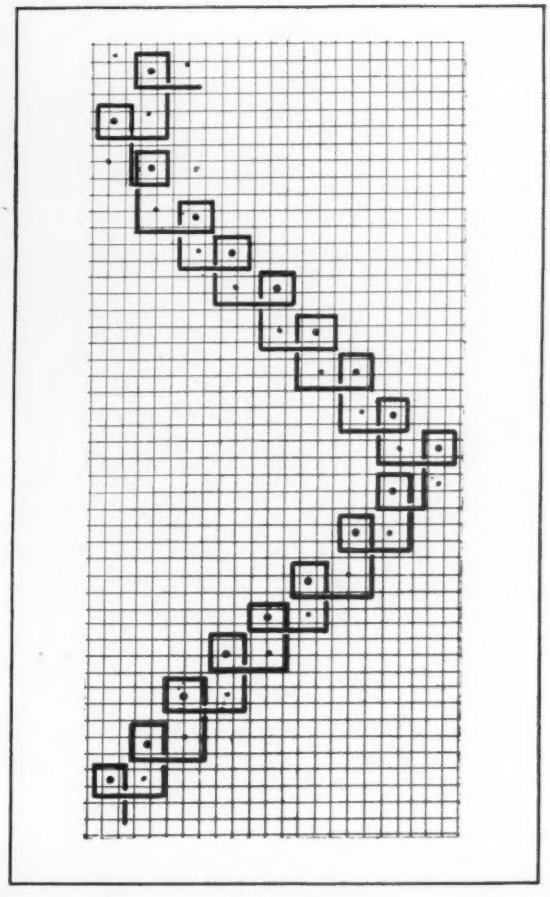


Fig. 3.

bars have a simple one-and-one side shogging motion to right and left and after every eight courses, the guide bars make a move eight needle spaces to the right and left alternately; that is, the bars move eight needle spaces towards the right and work eight courses in that position after which they move back again and work eight courses there in a one-and-one lap. This gives the check design shown in the figure, where black and white occur in exact squares. There is, however, one slight variation, that is, the blacks and white are arranged one needle space off the true position in relation to each other which gives a slight melange at the join. At one side of the check there is an overlap-

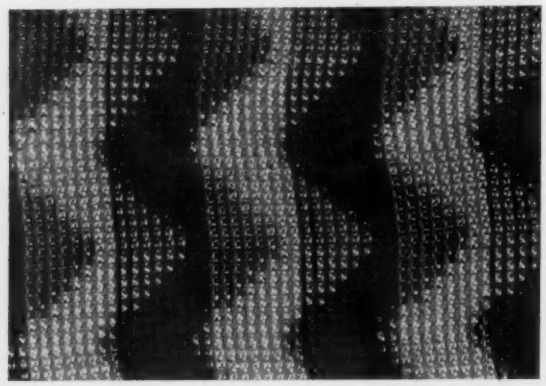


Fig. 4.

ping white, and at the other side there is a solid black line right down the pattern.

In Fig. 2 is shown the manner in which a guide bar is moved towards the right one needle space for eight courses of loops, when the bar turns on the ninth course and moves back to start one at a time. The black line indicates the eight black threads in the bar and these alternate with eight threads of white all the way through. Fig. 3 gives a view

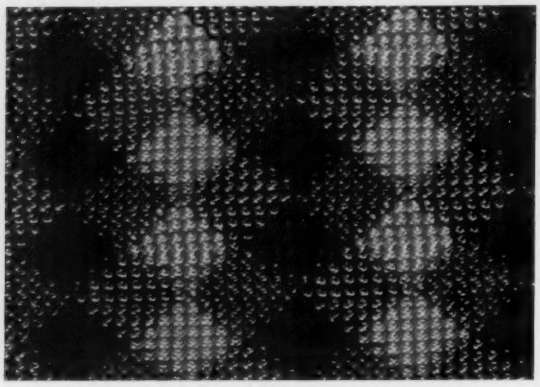


Fig. 6.

of the exact manner in which a guide bar travels and the black line shows the path of one guide point at succeeding courses. The dots represent needles and the black line indicates the exact action of the point round the needles in the action of laying or lapping the thread. Beginning at the bottom left-hand corner, the first lap is over a needle, the guide point performing the following stages: (1) swings through the needles; (2) moves one needle space towards the left and then swings back. The course of loops is then completed.

For the second course the details of the action are: (1) the guide moves two needle spaces towards the right; (2) it swings through the needles and moves one needle space to the left; (3) it returns to start and allows the course of loops to be completed when the action just described is repeated one further needle space towards the right. This takes place progressively for eight courses of loops and after the ninth the direction changes as follows: (1) move two needle spaces towards the left and swing through; (2) move one needle space to the right and swing back to lap the thread round the needle. This is continued in order towards the left until the starting point of the bar is reached when the action is repeated. It will be seen that the fundamental principle of lapping in this pattern is round the needle and the lapping threads thus cross each other. This gives a firmer texture than a simpler lap where the thread is laid over the needle by a straight lapping motion skipping from one needle to the next.

The fabric in Fig. 4 was made with one of the guide bars lapping as just described, while the back bar with

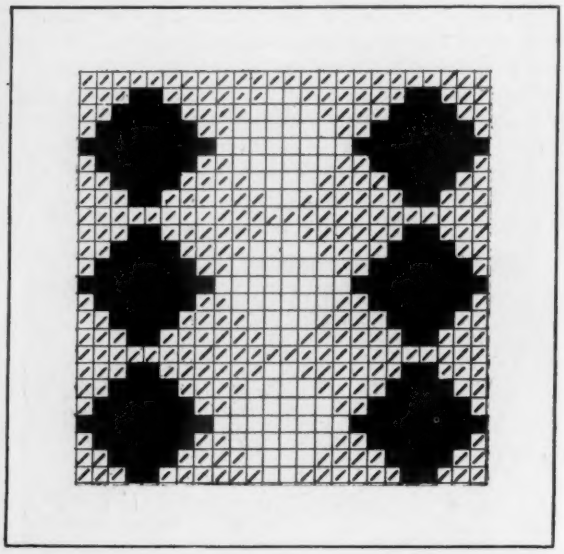


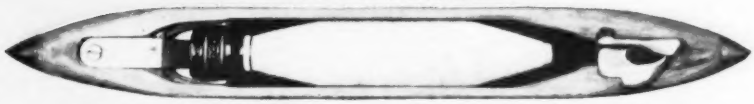
Fig. 7.

its eight white and eight black alternately make a simple one-and-one lap all the time. The zig-zag effect produced by the eight and eight zig-zag of one bar is plainly shown, while the back bar reveals its threads simply in a straight line, eight and eight stripe. The next step is to combine the two zig-zags, but have the direction of motion reversed, so that when the front guide bar is travelling towards the right, the back bar is moving towards the left and vice versa. The result is to produce one of the most popular and attractive styles of warp loom patterns where the diamonds stand on end and alternate, one solid line of black, then point-to-point a solid line of white with the intervening spaces working themselves out in the neutral gray.

This pattern is seen in Fig. 6, which shows a perfectly balanced pattern as described, the extreme black provides one quarter of the color weight, the white another quarter, while the remaining half of the scheme is worked in the grey which is blended in two ways: (1) where the white threads of the front bar intersect with the black threads of the back bar; and (2) when the black threads of the front

INSPECTED FILLING

"UNIVERSAL"



FULL SHUTTLE INSPECTED FILLING

COTTON SPUN BOBBIN

WORSTED-WOOL SPUN BOBBIN

UNIVERSAL WOUND BOBBIN

UNIVERSAL WOUND BOBBIN

WINDING COTTON-WORSTED-WOOL FILLING

This machine has enabled the progressive mills to effect far-reaching economies, starting in the spinning and carrying through the weaving and cloth rooms. These economies are realized through discarding the old practice of spinning filling on small bobbins that could be placed directly in the shuttles, and by spinning to the maximum ring possible to the count of filling, and then winding from the large spun bobbin to a proper shuttle bobbin on the Universal No. 90 winder. These bobbins are wound firmly and to an exact size to fill the shuttle, presenting at least double the amount of filling per shuttle that was possible with the old spun bobbin. The filling during the winding process is slubbed and cleaned, thereby giving an inspected filling.

To summarize, the use of this machine is directly responsible for increased production in spinning, increased production in weaving, and improved quality in cloth, with decreased costs.

Filling may be wound to the dimensions given on automatic loom bobbins with proper bunches for feelers, on cone base bobbins, and in pin-cop form.

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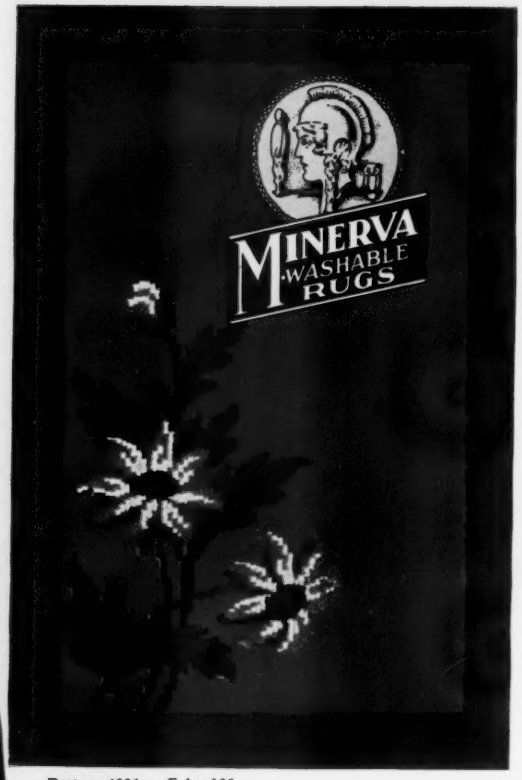
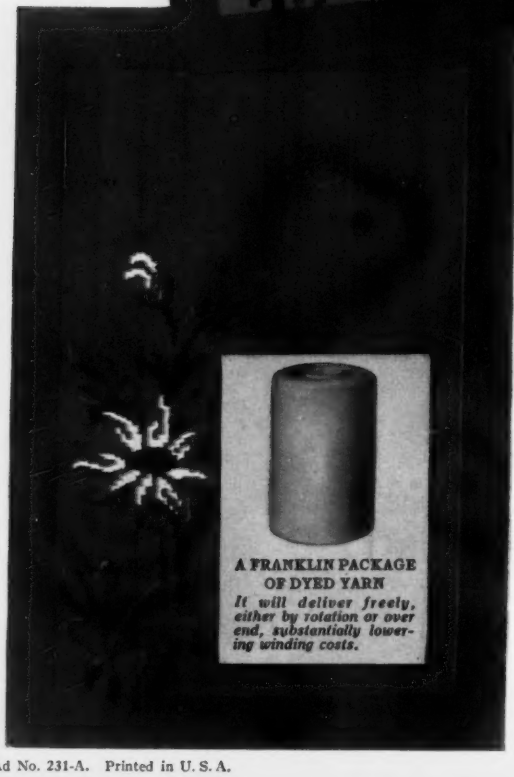


Pattern 4004 — Color 125

Pattern 4004 — Color 333

Pattern 4004
Color 902


A FRANKLIN PACKAGE
OF DYED YARN
It will deliver freely, either by rotation or over end, substantially lowering winding costs.

WASH RUG manufacturers to-day feature brilliant, harmonizing colors, distinctive designs, and deep, thick pile, with the result that their product is being used in homes where the ordinary wash rug would not be considered.

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Franklin Process Fast-to-Bleaching Shades (vat colors) are standard in these rugs, for it is imperative that the colors in the pile be thoroughly penetrated.

We have proved to this customer that the use of vat colors combined with the pressure method of forcing the dyestuff through every fibre of the yarn, results in even, durable shades that show no visible change when washed frequently or subjected to constant wear.

We have helped many concerns increase their sales and profits through judicious use of color. Possibly we can do as much for you. At any rate, we will gladly study your problem and give you the facts of what we have done and are doing for others, and let you be the judge. Write us to-day.

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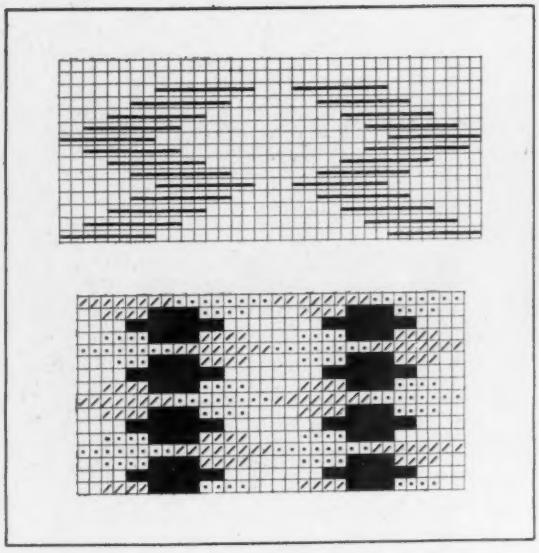

Above, Figs. 8 and 9. Below, Fig. 10.

bar interloop with the white threads of the back guide bar. Now if the movement of the two bars be worked out separately on squared paper each performing their movement exactly as in the loom, an exact replica of the color scheme can be obtained.

A method of doing this is shown in Fig. 7, for the pattern just explained. The solid black represents the black diamonds in the pattern, the empty squares the white sections, while the grey parts are given in dashes. In practice it is convenient to work as follows: where black interloops black, mark black on the square paper; where white interloops white leave blank; when the white of the front bar interloops with the black of the back bar a dash in the direction of the right and vice versa when the conditions of the interlooping are reversed.

Another simple variation on the lap of the guide bars just mentioned is shown in Fig. 8 and Fig. 9, the threading of the black and white remaining the same on back and front. In this case it will be seen in Fig. 8 that the guide bar in the front bed laps towards the right two needle spaces in place of one so that the repeat is complete in four steps; on the fifth the direction is reversed and the bars skip back to start two steps at a time. This is the movement of the front bar, but the back bar works in the opposite direction, so that it moves towards the left when the front bar is moving to the right and vice versa. The color effect produced by this combination of laps is shown in Fig. 10 where the black portions represent the places where the black of the front bar interloops with the black of the back bar; the plain white shows where white interloops white, the dots show where black of the front bar intersects with the white of the back bed, while the dashes indicate the contrary action.

This is given in the actual fabric in Fig. 11 where it will be noted that the design corresponds to what is sketched on the squared paper. This style of pattern is a very popular line of warp loom fabrics at the present time, particularly in the case of ladies' waistcoats or vests which are so popular in the three-piece knitted suits. The outer coat and the skirt are in the same pattern in a neutral ground

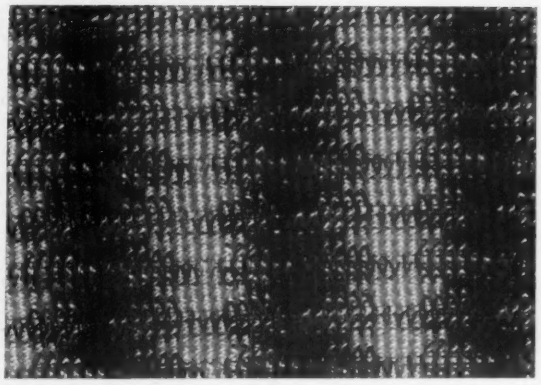

Fig. 11.

color, while the waistcoat is made in black and white strongly contrasted as shown in Fig. 11. The presence of the warp loom waistcoat in black and white also imparts a pleasing variety to the ensemble and often serves to modify and tone strongly contrasting colors in the costume.

The last example shows that the methods of the weaving industry for bringing variety and permutation to the weave can be adapted to guide bar laps for the designer can soon produce a score of permutations on those given, thus creating a wide range of new color schemes and figures for this interesting and successful branch of the trade. It may be said that novelty is the breath of life to the outer garment industry and as the appetite of the public grows by what it consumes, it is for the maker of warp loom fabrics to keep up the flow of novelties.

Fidelity Acquires New Developments

H. W. ANDERSON, president of the Fidelity Machine Co., Philadelphia, has acquired for his company options on several foreign knitting machine developments subject to their adaptation to the industry in this country. The optional rights for the United States were obtained during his three-months tour of knitting centers in England and the Continent, from which he returned a few weeks ago. He brought samples of infants' socks made in England, Germany, France, Spain, Italy and other countries, and for a time maintained an exhibition of foreign fancy patterns at his company's works, where they were inspected by manufacturers and jobbers. It seemed to be the consensus of those who made comparisons that there was little in the foreign lot to excel some American socks in color blending, while numbers of the patterns were admittedly unique and worthy of reproduction here.

Mr. Anderson reports having procured the American rights on Fridogia, a process for producing patterns in illimitable number on knitted fabric. The process involves printing or stamping fabric in which there are at least two yarns differently affected by a dual chemical treatment. One of the chemicals is used in the printing or stamping. The other is applied after the printing has been completed, and absorbs or dissolves one of the yarns where it has not been in contact with the chemical first used. Otherwise the fabric remains intact. As portions of the yarn are eliminated, the process opens the way to what is the equivalent to knitted in designs on flat fabric. It is said the process is less complicated than a description of its application in practice.

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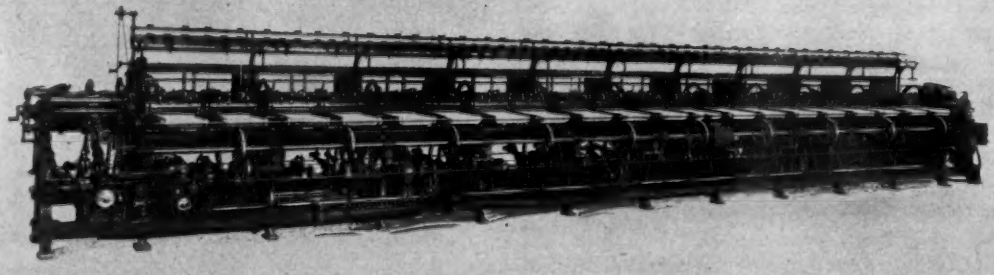


READING

FULL-FASHIONED KNITTING MACHINES

Training Hosiery Dyehouse Operatives

This Section Discusses the Rotary and Paddle Types of Dyeing; Bleaching Hydro-Extracting and Semi-Drying

By Charles B. Ordway

Part Three

A WELL TRAINED worker from the laboratory and chemical supply room, when shown the proper operation of dyeing and bleaching equipment, makes an ideal foreman or second-hand for overseeing the operations of the deying and bleaching machinery. He need not be a highly-trained technical man to make a first-class foreman, but one who will notice and observe all minor operating errors and correct the operatives.

The Rotary Dyeing Equipment.

On the rotary types of dyeing machines, there have been numerous improvements made. They can be adjusted as to the proper dyebath needed. If a 1 — 20 dye liquor is best, then the water gauge will show the necessary depth of water needed for the goods to be processed.

A new worker must be given a chart for his various machines, if they are of this adjustable type, showing him the necessary depth of water for given poundages of hosiery to be processed. Theoretically, there is only a small increase in the dye liquor from the incoming steam, but in practice there will be a variance in two machines of identical manufacture and capacity, due to steam leakage. The operative must become accustomed to these errors, and in case the trouble cannot be repaired, he should make allowance for them in the dyeing operation. This may be done by starting the dye liquor in a "short bath" instead of the required 1 — 20, or 1 — 40, as the steam leakage will quickly build up the bath to the required point and then should be maintained by careful supervision from the operator.

Now the hosiery can be entered and the process be run properly and all additions of dyestuffs, salts and chemicals can be controlled if the required type of bath is maintained and corrections made if the dyestuffs are off strength or the oils are of inferior quality.

In training the operatives as to the correct method of making additions of dyestuffs for shading purposes, they must be impressed by the fact that *a hurried and carelessly made addition will ruin the work of all preceding operations.* They must be shown that if a machine is out of order, it can be quickly repaired far more easily than a thousand dozen silk hosiery "seconds" can be made "firsts" again. There have been numerous occasions where an out-of-order machine was operated, thus causing poor work.

The Paddle Type of Machine.

It will be to the credit of an operative to take especial care along this line, and it will create a pride in the records of his machines. On each Friday afternoon or Saturday morning a regular inspection of all machinery should be made and notes made on repairs necessary, and the machines should be put in proper shape by the following Monday morning.

The paddle type of dyeing machines is fitted for certain types of hosiery processing, and may be run by belt, chain or individual motor drive. The successful operation of the machine depends upon the proper regulation of speed, depth of paddle wheel in dye liquor, and the maintenance of clean machinery by the operative. Additions of dyestuffs, chemicals and oils can usually be made in a strained and diluted condition; by adding at the back of the machine. Then the paddle will disperse the addition quickly. It is advisable to cut off the steam and the operation made in a cooling bath; on completion the steam is opened and the correct temperature secured. Though the writer has seen additions made in every style and form, the fact of sticking to the standard method will enable the superintendent to locate quickly any cause of trouble without delay

A sufficient boiler reserve must be kept for the processing work and this fact impressed on the mill management, as the control of dyeing and bleaching, technically, is a combination of physics, chemistry and mechanics. If one is out of order then the others will not function properly.

The use of the lifting apparatus enables the operator to handle the hosiery in bags with more ease, less soiled hosiery and without a helper.

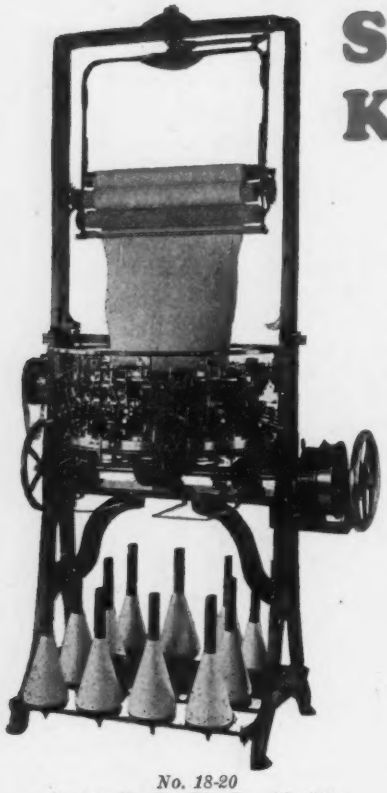
Thermostatic temperature control is of great assistance in cross-dyeing and preventing the "harshening" or "chafing" of silk in degumming through the prevention of overboiling the bath. The operator can set the regulator at the required temperature and with proper care he can handle several more machines than when it is necessary that he be watching each machine and adjusting the steam valves accordingly. This addition, if looked after, aids a great deal in taking the guess-work out of temperature control on dyeing, bleaching and degumming silk.

On paddle dyeing machines more care must be taken in securing capacity of the machine or the processing will be made more difficult and frequent additions will be necessary as the batch will be "too long" or too dilute a dye liquor concentration for the amount of hosiery being processed. This "long bath" causes a lessening of the affinity of the fiber for the various dyestuffs or bleaching compounds, and the formula cannot be duplicated successfully.

In addition to being inspected once a week, the machines should be given a thorough cleaning on Saturday, and great care must be used in stripping agents and alkalies used, for a clean machine aids an operative in many ways. Chemic and soda ash will clean most colors off of wooden equipment, while discolorations caused by hydrosulphite, sulphoxalates and acids are greatly improved by a cleaning combination of sodium silico aluminate and caustic soda, in a concentrated form, about four to five per cent at a boil. These concentrated alkalies are necessary to remove the sediment caused by oils, degumming, soap, etc., in paddle machines. The false bottom can be removed and the cleaning of it made easier. The rust that accumulates on the steam jets can be removed by soda ash at a boil.

1928

Cooper Spring Needle Rib Knitting Machinery



No. 18-20
Spring Needle Rib Top Machine with Stop Motion.

COOPER SPRING NEEDLE CIRCULAR RIB KNITTING MACHINERY is standard for ribbed underwear in silk, Rayon, cotton and woolen underwear. Shirt Cuffs, Drawer Bottoms and Collarette.

For three-quarters of a century the name Cooper has represented knitting at its best. Starting with a small needle-making shop in Nottingham, England, and coming to the United States in 1842, James Cooper became the first American engaged in this trade. He realized from the very first that the making of needles and knitting machines was a scientific undertaking. Thus has he handed down to his descendants an undying inspiration which has kept these famous products far ahead of the times.

Oldest Makers of Spring Needles in the United States

From a hand-made, sparsely produced needle, the Cooper Line of Spring and Latch Needles has grown with the textile industry into the most complete in the United States. As the first manufacturers of Spring Needles we have retained a life long prestige—accounting for the fact that Cooper is to Needles what Sterling is to silver.

G. H. ROGERS, Traveling Representative, 877 Warren St., Albany, N. Y.

C. C KELLEY, Sales Manager, 121 East 24th St., New York City.

G. W. MORTON, Southern Representative, 1002 Magnolia St., Greensboro, N. C.

Agents: MELLOR, BROMLEY & CO., Ltd., LEICESTER, ENGLAND.

ELBROOK, INC., 50 Peking Road, Shanghai, China, Agents for China and Japan.

M. BUCHSBAUM, Calle Alsina 1814, Buenos Aires, Argentina.

Established 1842

Charles Cooper Co.

Machine and Needle Works

Bennington, Vermont

On rotary machines not having the lift apparatus, where the operative can not get into the machine and clean as in the paddle type, gasoline, benzene or some solvent capable of dissolving this sediment is quite necessary.

Handling the Bleaching Process.

When the bleaching liquor has been prepared whether chlorine or peroxide, it should be checked as to the strength, neutrality, acidity, and alkalinity according to the type of hosiery and fiber to be bleached. The operator of this process must have the essentials carefully shown him, stress being laid upon temperature, proper preparation of hosiery previous to entering it into the bleaching liquor, and the necessary period of time to complete the process.

If chlorine is used, the wood, cement, or iron or kier must be thoroughly cleaned and the bath prepared and checked as to Twaddle and strength; then on completion it is best to check the bleach liquor as to the value received from it and any further adjustment of bleaching formula made.

When he has become accustomed to the correct appearance of the goods before and after scouring, the operative can proceed with his work with more or less accuracy and ease.

The use of liquid hydrogen peroxide is of great aid on pure silk and rayon; while sodium peroxide in the powder form is easily prepared for cotton and heavy rayon-cotton hosiery. By using the liquid peroxide, the operative is given an almost foolproof operation in the carrying out of this process, both in the preparation and handling.

The peroxide bleach is best strained through cotton cloth, especially when using sodium peroxide. Careless preparation of the sodium peroxide, and not straining it, will allow small undissolved particles to lodge on fibers of the hosiery and in conjunction with impurities of iron or rust, will cause tendered spots or oxycellulose in the cotton and rayon fibers.

Standard methods for temperature, stated periods of time, preparation and clean machinery are essential to a good white in hosiery. Bleaching at too high a temperature, when starting and not cleaning out the iron steam and water piping that empties into the bleach liquor will cause a poor bleach. This will necessitate re-bleaching the lot of hosiery and may cause "harshened" silk and rayon, which after finishing will probably be sold as seconds.

On Monel metal and wooden machines the same care must be exercised on repairing and cleaning of equipment once a week. A leak in the bleaching equipment can cause a poor bleach through "leakage of bleach power". The steam jets and pipes on peroxide bleach should be of lead, Monel metal, and be given a thorough weekly boiling out with soda ash to cut out any rust deposits from the main iron steam pipes which are usually at a higher level than the outlets on all equipment.

Where an iron vat is used and cement is used as the coating and painted with silicate of soda, this surface must be kept well painted every few weeks to prevent any chance of iron or rust spots appearing on the fiber during the bleach.

As mentioned before, sodium peroxide is accused of causing more "tendered" spots in bleaching because of this iron in the liquor, but in reality it can be usually traced to carelessness on the part of the operative or person in charge in not giving a definite method of procedure. For this reason the liquid peroxide is easily prepared and processed and aids the operative in preventing waste and mistakes.

Though I have heard of mills receiving poor bleach work from Monel metal equipment, this is an extremely rare occurrence. If it is confirmed by many experimental runs and chemical tests, then in the manufacture of the alloy there was a miscalculation and that may be the cause of "yellowed" bleach goods.

Hydro-Extracting and Semi-Drying.

When the operative is taught the operation of a hydro-extractor, he must be shown the saving made when the hosiery is properly packed in the extractor and extracted over the required period of time, instead of "just throwing the hosiery in and whizzing it" for any old length of time, as is sometimes done. In the handling of silk, chiffon, and fine denier rayon hosiery, it is best to have the operatives wear cheap white cotton gloves to prevent the "snagging" of silk and rayon threads during the handling. The hosiery is usually placed in bags or cheese-cloth covers and packed evenly in the extractor. This aids in giving the extractor equilibrium and the hosiery an even extraction.

Some extractors can be set automatically as to the required time on each lot of hosiery. This aids the processing and finishing departments in arriving at the required time for extraction which will give the hosiery the best final appearance as it shows up in the sales room.

Three-fiber and silk hosiery must be untangled and carefully packed in the extractor after being degummed and boiled off. On rayon hosiery, the length of time required for extraction is usually much shorter than that for cotton and silk hosiery. On extraction the dyed or bleached hosiery is placed in a semi-drying compartment. If the production is large enough, it is well to have one high-speed extractor kept on rayon and three-fiber hosiery entirely, for the operative can then secure a uniformly extracted hosiery that will be always acceptable in the boarding and finishing departments.

When an extractor becomes wobbly and the Monel or galvanized or copper lining shows wear, it is best to have the machine relined and re-balanced.

On the automatic time stop extractor it is well to check up on the timing devices to see that they are always accurate. Where the extractor is belt-driven, it should be tested for slipping and adjusted accordingly so as to insure best results in extraction.

In the semi-drying department, whether it is a conveyor type dryer passing over hot air or a series of open tables in a heated room, the operator should wear cotton gloves in handling the hosiery.

[This is the third article in the series by Mr. Ordway discussing this subject. The fourth and concluding article, to appear in an early number, will complete the discussion of the outline published in the August issue, dealing especially with Water Softeners, Central Storage Room, Shading Match Room, etc., etc.—The Editor.]

A. E. Colby Succeeds Edwin Farnham Greene as Pacific Mills Treasurer.

A. E. Colby, for several years assistant treasurer of Pacific Mills, Lawrence, Mass., has been elected treasurer succeeding Edwin Farnham Greene, who recently resigned, to head a new business enterprise, it has been announced.

SCHUBERT AND SALZER

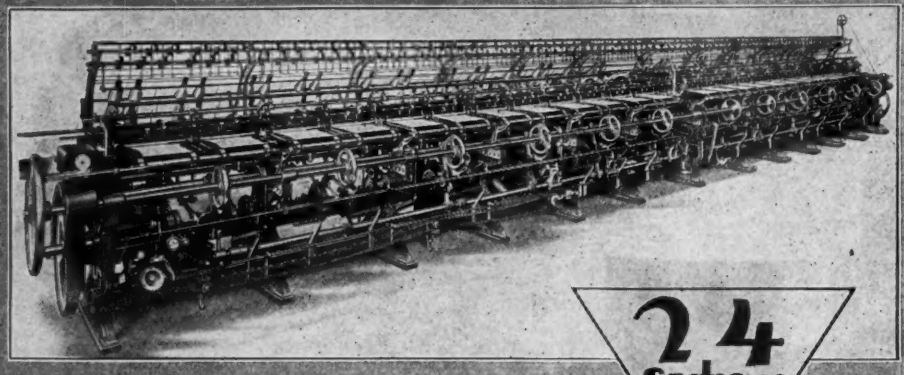
HIGH SPEED **TYPE H.S.L.** 65 COURSES PER MINUTE

Excess Production *Proven!*

Unbiased engineers' tests have proven that hosiery producers employing type H. S. L. machines are receiving *greater* production than they would if they employed another machine. We will gladly send you full details.

"Ask the man who operates one"

ALFRED HOFMANN, INC.
WEST NEW YORK NEW JERSEY



24 SECTIONS ALL GAUGES

FULL FASHIONED HOSIERY MACHINES

What Causes this Loose Stitch?

EDITOR COTTON:

We are having some difficulty, on our Model B-3 Scott & Williams machine, as follows:

When the first long butt or the first needle taking down the yarn, comes in, there is a loose stitch or long stitch as shown in the sample which I am sending. I have inspected the yarn spring clamp and have made the spring tighter and looser and examined every other thing which I know would cause this, and still I have this loose stitch. However, it shows up only on rayon and silk. The mercerized and cotton yarn run fine, without any trouble at all.

Any suggestions which the readers of "Knitting Kinks" can offer as to what might be causing this difficulty will be sincerely appreciated.

CONTRIBUTOR No. 4065.

Oil and Belting in the Knitting Mill.

EDITOR COTTON:

I think of one place where hosiery knitting mills generally, either through lack of interest or carelessness on the part of the management or the help, practice false economy or are losing a lot of unnecessary money. I refer to the oiling of the knitting machines.

You can go into almost any knitting mill town and find any number of mills where enough oil has gone onto the floor almost to pay a nice dividend—certainly you would find in a majority of plants an unnecessary amount of oil wasted. And what a lot of mills fail to see, according to my observation, is that the loss in the cost of the oil is not the only waste or bad result coming from the improper method of oiling.

Everyone has his own ideas about this business, so I can only give you my own, together with what we know it has accomplished for us, and then leave it to every man to be guided according to his own judgment.

We have 240 knitting machines in this plant, which has been in operation for almost six years. I made up my mind when we started that I would endeavor to find out what the best oil for me to use was, and settle on it. I tried out five different kinds, in an unbiased way, and decided upon a semi-fluid or non-fluid lubricant type. I am not giving trade names, because of ethics and also because I have later found other makes than the first used to be equally satisfactory so long as they were of the same general type and contained the proper ingredients.

I think that in addition to selecting the right kind of oil, the method of applying it is almost as important. You don't want to *pour* oil into a knitting machine head. That's how it gets on the floor. I have settled on a can with a spout about as big as the large part of a toothpick, which gives about six drops of oil into the machine. That's enough.

Of course these remarks do not apply to the running gear of the knitting room. This we use the usual kind of lubricant on, and lubricate it once a week. We oil the heads of the machines once a day, in the morning, and then we oil the sinkers again after dinner.

Getting back to the oil used for the machine heads, and the advantage of using the right kind and applying it in the correct manner, in five years we have used 109 gallons of this non-fluid type for 240 machines. You can figure it out that it would have been real economy to do this even if I had had to pay up to a dollar a gallon for the oil.

Furthermore, due to improper oiling and the wrong kind of oil, mills, especially on fine gauge machines, have considerable trouble breaking walls. I think in the past six years, on 240 machines, we have not put in over twelve walls, which I believe is another good record.

There is another place where I think many mills practice false economy, and that is in the matter of belts and pulleys for driving the knitting machines. A lot of mills use an ordinary type of belt, thinking this to be a small item compared with bidding in the market, or getting the right kind of a shade on the goods, or cutting down seconds at some big obvious point, without realizing how much effect this one point can have on their business. Anyone who has watched a fixer repair a belt knows that ordinarily, when a belt breaks, the fixer is busy doing something, and he wants to get the belt back on in a hurry, so he takes it over to the bench (probably already the belt hook was bradded on by improper application at another time when he was in a hurry) and takes a knife and cuts out the small piece where the old hook was, and puts in a new hook, and back on the machine it goes. After a while it gets tighter than it should be—and some of them do get pretty tight—and then when the machine jams, as all machines do, bingo, there's a bunch of needles broken!

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need no conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

For this and other reasons I think it is the wiser thing to spend a little more money for a special belt, and then take the effort to see that it is properly applied. I also prefer the split steel pulley to the wood pulley for the driving shaft.

I may have something else to say later on for "Knitting Kinks," along the line of reducing seconds and the mistakes some mills make along the line of waste. I think my biggest job as superintendent of a knitting mill is keeping down seconds and waste. CONTRIBUTOR No. 1010.

Routing Retail Fancies through the Mill.

EDITOR COTTON:

In the July issue of COTTON, "CONTRIBUTOR No. 4027" asks for information on routing fancies through the mill. In reply to his questions as to where we get our patterns, the size to make, how often to change and who does the changing, I will give him the method we use in our mill.

We get our patterns in various ways, most of them are original, some we copy from shirts, dresses and sweaters. The pattern is first copied down on a piece of paper and then worked out on the machine.

In making samples we always make size 10½, for stock we make five sizes—from 9½ to 11½. When making fancies it is best to make all sizes; we sometimes make a few 12s. It will be found when making socks to sell to the retail trade that it pays to knit the size to fit the board as this gives a good fit.

We have only 24 machines on one style making four to six colors and four to six reverse stripes. The knitter is placed on one color and one size with orders to make so many dozen pair. When she finishes an order she is changed to another set of machines, sometimes it is necessary to change a knitter three or four times a day to get the colors and sizes wanted.

We make an effort to go over the orders every day so as to be sure that we have enough yarn on hand to fill the various orders. In this way it is very seldom that any trouble is had with yarn giving out.

It is best to have a regular fixer, doing nothing but making changes. It will keep a fixer busy ten hours a day doing nothing but changing. When he changes a machine he stays with it until he is sure that the size, color and stripes are right. We have one girl who does nothing but change the yarn on the machine; in this way we have very little trouble with yarn getting mixed.

With the constant changes we are making we have found it best to change the knitters from one set of machines to another when making a change. For the first two weeks that they are with us we allow them so much when we change them from one set of machines to another, in this way we keep them satisfied.

We have been on fancies since 1918 selling to the retail trade; previous to that time we were selling to jobbers. We try to get out a new pattern to our salesmen each week. The fixer who does the changing makes the samples. We seldom make over 500 dozen pair of any style with assorted colors, I remember only one order on which we ran for three months. I have seen a lot of orders come in for three pairs of size 10, six pairs of 10½, six pairs of 11 and three pairs of 11½, this shows that it does not pay to make over 500 dozen pairs except when we have a pattern that is very popular.

We have 500 machines making 27 different styles. If the salesmen do not sell a certain pattern we change the machine at once. Sometimes we will make up 500 dozen pair and tell the salesmen that they can get immediate shipment on them, this helps to keep the stock moving.

We have one man who follows the different sizes from the knitting room to the shipping room to see that they keep moving all the time. "CONTRIBUTOR No. 4027" will find that it takes more people when working for the retail trade than for the jobbers.

S.J.(PA.)

The Proper Temperature for Knitting Rooms.

EDITOR COTTON:

I note that one of your readers has asked the question as to what temperature should be maintained in the knitting room of a full-fashioned mill in order to secure the best results in the knitting of hosiery. This is one question that is often discussed among full-fashioned hosiery manufacturers and the opinions differ as to what is really the best temperature to maintain.

Every hosiery manufacturer must agree that in order to successfully operate a knitting room of a hosiery mill, evenness of temperature is necessary, as knitting machines contract and expand very easily and continually having extreme changes in temperature causes trouble and menders.

In the matter of what is the proper temperature to maintain, one must take into consideration what kind of a building the knitting room is in and also the make and gauges of the machine.

I mention first the building because, if a building is poorly constructed and is inclined to be draughty, then it is necessary to maintain a higher degree of temperature, as cold air will cause contraction quickly and it is necessary to heat such a building to a high temperature to keep out the cold air.

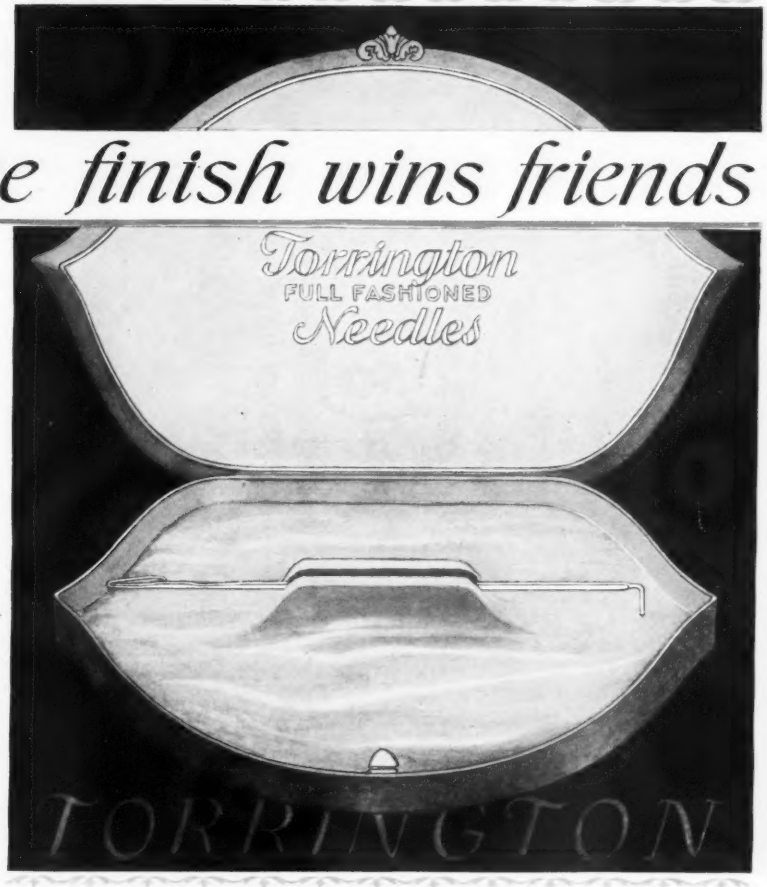
In the matter of makes and gauges of machines, some makes are very sensitive to low temperatures and then it is necessary to have the knitting room maintained at a rather high temperature.

In maintaining a temperature in a knitting room, my opinion is that it is best to maintain the temperature at the lowest degree possible, because it is better for the operators and there is less tendency to have the silk dry out.

My experience has been that any 39-gauge, 42-gauge and even 45-gauge knitting machines placed in a well-constructed building can be operated successfully in a temperature of from 75 to 77 degrees heat. This temperature is ideal for the operators and very little trouble is experienced with the drying out of the silk. It is necessary, however, that when the machines are once set for this temperature, that one must see that this temperature is maintained at all times and in order to have this temperature the heating system should be controlled with a reliable thermostatic or temperature control.

Some will say that this temperature is too low and that when they tried it they had all kinds of trouble. The reason for this in many cases is that a temperature of 80 or more degrees was formerly maintained and then instead of reducing the temperature one degree at a time, so that the machines could be reset gradually, if the temperature is reduced at once to 75 degrees, of course trouble will develop, when such a radical change is made.

Their fine finish wins friends



THE first thing about Torrington Full Fashioned Needles that attracts the eye is their glossy brightness. It is a feature enthusiastically commented upon by knitters everywhere, and justly so.

This glistening, glassy surface is significant of rust-free and rust-proof needles. So the remarkably fine finish of Torringtons is another factor in their favor . . . and your complete satisfaction.

Day in and day out the performance of Torringtons reveals that they are very accurate in formation and dimension, remarkably close to unvarying uniformity, and easier to prepare for actual knitting.

The Torrington Company

ESTABLISHED 1866

Torrington, Conn., U.S.A.

THE TORRINGTON COMPANY
CHERRY AND JUNIPER STS.
PHILADELPHIA

BRANCHES
C. E. BARKER & CO., LTD.
140-144 W. 22ND STREET
NEW YORK, N. Y.

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FACTORIES AT
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The Third Factor in GOOD KNITTING

SATISFACTORY yarn and machines are but two sides of the knitting triangle. The third essential is Needles. And unless your needles are above the ordinary it is useless to ever expect the best results.

This always important problem may be settled for good and all if you concentrate on Torringtons. Continual specialization on precision production has developed a Latch Needle which is worthy of the Torrington trade mark . . . and worthy of a place in your machines.

Torringtons have that fineness of temper, that stamina of construction and smoothness of finish, owned only by the finest needles. To these are added absolute uniformity . . . another preventive of "seconds".

These are *some* of the reasons for Torrington Needle supremacy.

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In operating 48-gauge or finer gauge machines, it is best to have the temperature at about 78 to 80 degrees as the finer gauge machines are very sensitive to cold and better results are obtained where finer gauge machines are operated in a higher temperature.

I am sure your readers will agree with me that it is not pleasant to work in a so-called hot mill and in full-fashioned work, it is not necessary to have high temperature under proper conditions. Usually it is not costly to repair or plug up such places in a building that cause a draft or cold air to enter and when once the machines are set to operate under a temperature of 75 degrees, they will operate without trouble and produce quality hosiery. The operators also do not become fatigued so easily and usually a manufacturer secures a better and greater production.

I know some manufacturers will say that 75 degrees of temperature is still too high, but I find this is not so, as when too low a temperature is maintained, it has a tendency of causing the oil and grease in the sinker heads and jack heads to congeal and results in poor fabric being made. A knitting machine is like an automobile in this respect; as an automobile never runs properly until "heated up" somewhat.

I am sure that if the manufacturer who is interested in securing information on this subject, will maintain the temperature of his knitting rooms at from 75 to 77 degrees and nearer 75 than 77 degrees, he will obtain just as good results as far as fabric from the machines is concerned and will benefit from the results obtained from the operators because the operator can work better and harder and become less tired when a lower temperature is maintained.

CONTRIBUTOR No. 4015.

EDITOR COTTON:

The proper temperature to be maintained in the knitting room of a full-fashioned mill was the subject of a question from "Contributor No. 3062" in the April issue of COTTON.

In answering this, I will say that if I had my choice, I would prefer 74 degrees F. However, I think that full-fashioned machines will operate satisfactorily at any given temperature, between 70 and 90 degrees, which can be maintained, but *maintained* is the all-meaning word. The question is how one can maintain a temperature of 74 degrees with steam heat inside the mill and with a prevailing temperature of 80 degrees outside. The answer is, that it is a matter of cooling instead of one of heating. The artificial lighting and the heat from the machines will raise the temperature of the room from 5 to 10 degrees. A variation of ten degrees in temperature in the room will affect the narrowings perceptibly. Therefore, the proper temperature to try to maintain in a steam-heated room, should be within five degrees of the lowest temperature, which could be maintained on the warmest days with the heat cut off.

The proper solution of this problem, in my mind, is the installation of a system which may be used as a cooling system as well as a heating system. Then a constant temperature of 74 degrees would be ideal.

W. A. (N. C.)

The fact that 40,000 glass eyes are imported annually should serve as a warning that some carelessness still exists. in this country.

Knitting Close Stitches on an 11-Cut Underwear Machine.

EDITOR COTTON:

In the June issue of COTTON, "Contributor No. 4007" indicates that he is having some trouble knitting a close stitch, using 30/1 yarn on a 11 cut, 36 gauge rib machine, and will say that I believe the trouble can be corrected by a slight adjustment on the machine.

This contributor seems to be sure that the yarn unhooks, but there is a possibility that the yarn twists out of the cylinder needle hook, therefore not being caught by it. A light tension on the yarn and adjustment of the guides will correct the trouble if this is the cause.

He mentions that the trouble disappears when the stitch is loosened a point or two; when the stitch is tightened, the drops occur. The tightened stitch causes the cylinder needles to rise too soon after drawing the stitch, thus releasing it before the dial needles withdraw to keep the tension on it.

To correct this, he might try adjusting the dial cap forward, unless restricted by other requirements.

Another thing, the landing cam may cause the needles to rise too fast, or the heel of the stitch cam has too sharp an angle. These could be ground so that the cylinder needles raise as the dial needles withdraw.

I trust that "Contributor No. 4007" will find in the foregoing a solution to his problem; if not, I shall be glad to answer through "Knitting Kinks", such questions as may arise after these suggestions have been adopted.

CONTRIBUTOR No. 4057.

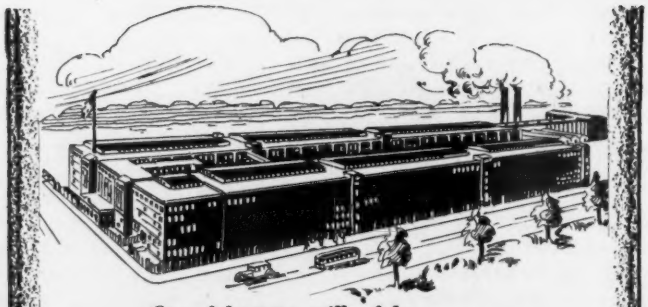
Suggestions.

EDITOR COTTON:

Time and labor saving devices are always looked for by progressive hosiery manufacturers. The more they can get, the better for all concerned. Such labor and time saving devices may be of the smallest detail, but it is these smaller details combined that produce results. At times, suggestions received by foremen due to various reasons, cannot be put into effect, but taken as a whole these suggestions are helpful.

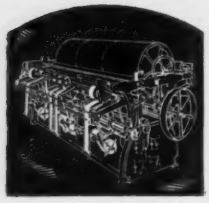
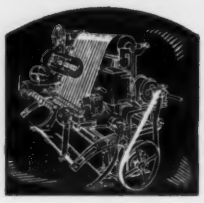
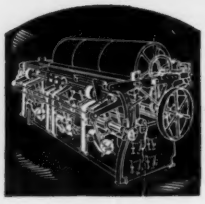
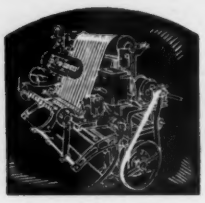
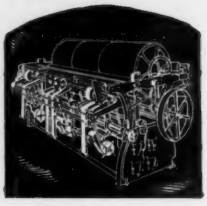
Suggestions are often eagerly looked for from department heads and employees. It seems as though too little interest is taken along this line; those concerned go about their regular routine giving little thought to the benefit which can be derived from more attention to methods. But let's look at it from a little different angle. I have discovered a cost and labor saving device which has resulted in considerable saving to the firm, also making the work easier for myself. You have done the same with another idea, but you do not know what my idea is and I do not know what yours is. Let's put the two ideas together and both of us will benefit from the other. Why not? Is your idea of such importance that it cannot be given out? This may be true in some cases, but looking at it from the average point of view you will be benefitting the entire hosiery industry, which is surely a worthwhile thing to work for.

The writer has had the pleasure of offering suggestions to the readers of COTTON'S "Knitting Kinks" section on several occasions during the past few years. I have also been on the receiving end sometimes. From the results noted I feel that it has been of material benefit to the mills



One of the many mills of the American Woolen Company

THE AMERICAN MARKS WITH

This is the famous Ram's Head Trade Mark of the American Woolen Company. It is applied with Kaumagraph Transfers on the back of every yard of fabric.

"EVERY genuine Ram's Head Fabric," . . . we quote from a recent advertisement of the American Woolen Company in the Saturday Evening Post . . . "is clearly marked on the reverse side of the cloth."

"Clearly marked" . . . for every yard of the fabric is marked on the back by means of Kaumagraph Dry Transfers. For applying the transfer to the goods, Kaumagraph has already supplied the American Woolen Company with 10 machines . . . 6 Transferotors and 4 Intermittents . . . equipment that will be constantly added to as conditions require.

The Kaumagraph Company is especially proud that the American Woolen Company has standardized on the Kaumagraph Transfers. Not merely because the American Woolen Company is the largest concern of its kind, but particularly because Kaumagraphs were chosen on their own merits in competition with every other kind of markings available.

For before standardizing on Kaumagraphs the

high quality ... you buy.

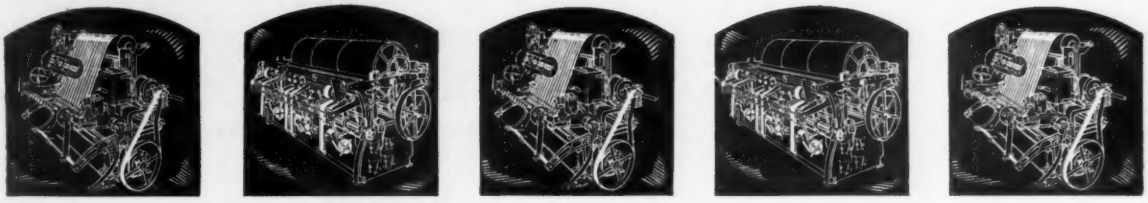
Every fabric is clearly marked Ram's Head Fabrics, so everyone may know it. Each is rigidly tested for quality of material, color and weave, before it leaves the mill. Every yard is trade-marked and *guaranteed* by the largest producer of woolen ... fabrics in the world.

When you see the ... HEAD label on ... ready-to-wear garments ... mean ... dyed

Extract from double page advertisement of American Woolen Co., in recent issue of Saturday Evening Post. Of course every yard "is trademarked"—with Kaumagraphs.

WOOLEN CO.

KAUMAGRAPHS



American Woolen Company made a thorough study of various methods of applying trade marks. Many were tried and found wanting. The Kaumagraph Transfer method proved itself far superior to all others in quality, legibility and economy.

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COST accounting has shown that many inefficiencies may creep into the production of garments.

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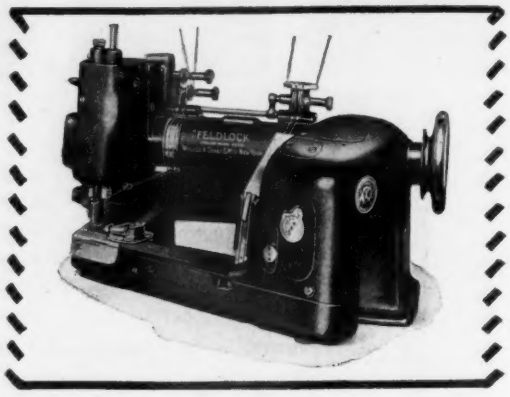
Users of the Feldlock know that their seaming costs are at the absolute minimum. For this "Machine That Makes Production" is famous for the quantity of quality work it produces.

The Feldlock sews *off* the arm. It makes the 2-needle or 3-needle lapped fell seam. Have you sent for your copy of the Feldlock booklet?



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WRITE OUR HOME OFFICE FOR SAMPLES MADE ON THE FELDLOCK, OR SUBMIT YOUR OWN FABRICS FOR SAMPLE PURPOSES

in various parts of the country whose men have so taken part, but I do think that there has not been enough such cooperation in offering ideas. Come on fellows. Let's show the editors of COTTON what we have learned of the hosiery business, and I am sure the editors will be responsive.

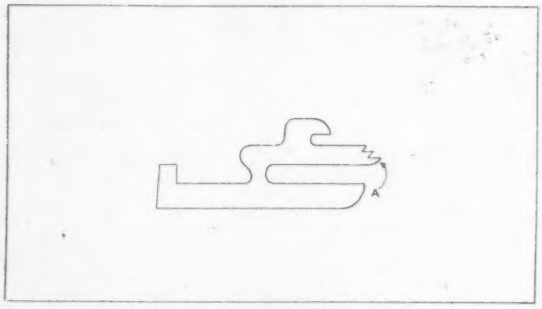
CONTRIBUTOR No. 858.

Stopping Cut Holes on the R I Machines.

EDITOR COTTON:

I am writing this letter to discuss the causes of a Model R I machine cutting holes just before going onto the heel on about the second or third short needle from the long needles on either side. This was brought up by "G.C. (TENN.)" in a recent issue, who said he experiences this trouble occasionally, plaiting 150 denier rayon over 36s/1 comber peeler, using two ends of 50s/2 gassed yarn in the heel and toe.

This is a common difficulty, especially when rayon yarn of any nature is used in the hose on this type of machine. Years of experience has shown me a solution to this problem. I would suggest taking out one or two, or possibly three of the saw-tooth sinkers at the place where the cut-out occurs. After doing so, cut off the first tooth on these sinkers as shown in the accompanying illustration



at point *A*. After this is cut, re-polish and re-insert in the machine, and I can almost wager that this trouble will stop.

I further suggest taking off the needle dial and dial plate, and letting the machine knit the heel, noting the action of the saw-tooth sinkers at the point where the cut-out occurs. Due to the up-and-down action of the short buff needles only, the fabric is held tighter against the sinkers in the corners where the cut-out occurs, so consequently the back and forth motion of the saw-tooth sinkers at this point gradually cuts into the fabric, causing these cut-outs. The purpose of cutting the sinker as shown is to release the strain at this point.

Another remedy for this trouble is to take the ears out of the gear ring tube. This allows for a free swing of the hose during the knitting of the heel.

Care must be taken so that the saw-tooth sinkers are not set in too hard on the fabric, because the harder the tension on the sinkers, the more strain is put on the fabric.

The central sinker cam must not pull the sinkers back any further than is necessary. The further back the sinkers are pulled, the more strain is put on the fabric, as the saw-tooth sinker comes forward at the knitting point. It is only necessary to grind the back of this cam to allow them to come forward, being careful, of course, not to take off too much.

RYMI.

Adjusting Product to Suit the Market.

EDITOR COTTON:

This is a synopsis of what can be accomplished in any mill finding their market closed for the knitting machinery at hand on the product usually made.

Any factory having body frames ranging in sizes from 8 to 24 inch heads can use these regardless of needle cut to the inch by simply following the trend of the market or showing what is in demand. To illustrate this more fully, let us assume that a factory has been manufacturing children's light and heavy union suits or vest and drawers. In the making of these they either use 10, 11 or 12 needle cuts to the inch, dials and cylinders.

Supposing the market was closed due to an overstocked condition or no demand for that class of merchandise, this factory could, by using the proper size or count of yarn use either of their different cut dials and cylinders to knit childrens' bathing suits, coat sweaters, pull-overs or dresses. They would also find their sewing machines adaptable to finishing these with but a few exceptions. The same is true of a factory manufacturing ladies' light and heavy vests, drawers, union suits, step-ins, or French unions; also of a factory manufacturing men's light and heavy weight merchandise; also of a factory using spring needles. In the latter, rayon garments can be successfully made. It is remarkable how by simply changing yarn and the adjustment of the machine what can be knit to satisfy the trade.

Assuming that all these suggestions as to an interchangeable plan are not practical, surely then, these factories where it is not advisable to change as described, can purchase from other manufacturers such cloth or fabric as they decide to finish. In this manner they keep their help and make a profit even if they do not use their entire equipment.

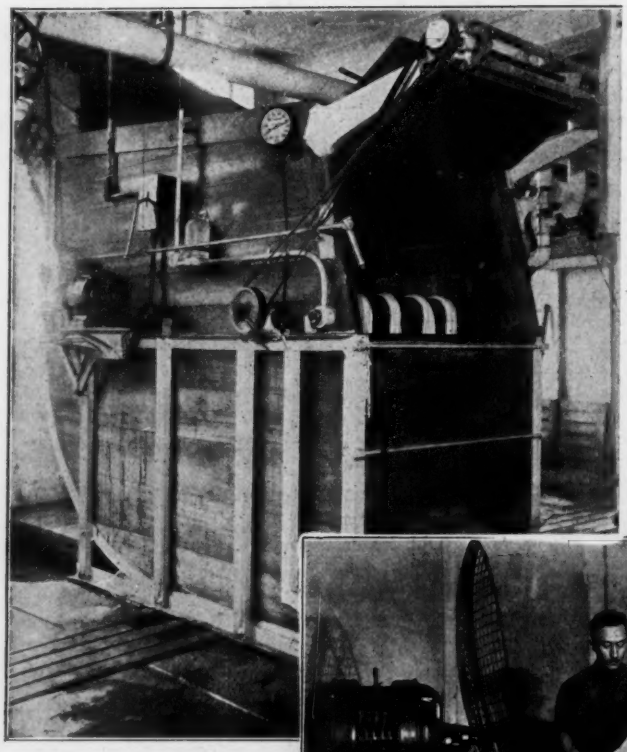
Anyone in business today must be wide awake and keep in touch with the trade and must manufacture what the trade wants, not what the manufacturer desires to make.

A mill must follow the styles and trends of the times. As an example, union suits may be all the rage one season and nothing the next. I personally know of several factories designed to make ladies' union suits. They thought the product, as manufactured by them, was here to stay and refused to believe the style had changed. After several unsuccessful years they very reluctantly changed to other styles for which there was a demand and found they were wise in so doing.

The writer feels, from his experience over a long period of years, that the textile industry is divided into three distinct groups.

The first group is composed of those manufacturing a standard and well branded article. These can, if not lacking in capital, stock up their product and dispose of it when their market opens. This permits them to manufacture one or several of their brands continually without a change over.

The second group is composed of those who change over their product, adapting their lines to market condi-



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New developments to save worthwhile dollars and valuable minutes in your dyeing, extracting, drying and finishing departments.

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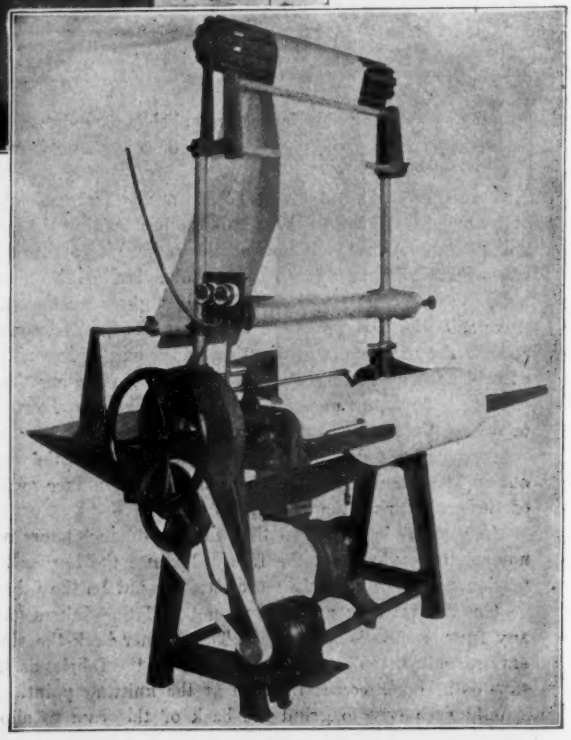
A modern Scouring and Dyeing Machine of sturdy construction. The inside fixtures and arrangement of tub prevents streaks and insures level dyeing.



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GRAND RAPIDS TEXTILE MACHINERY COMPANY

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tions and the trend of the times.

The third group is composed of those who do specializing, either in their knitting department, bleach house or finishing room, or do cooperative manufacturing.

My firm convictions are, however, that the time is not far distant when the manufacturer will be compelled to change with the seasons of the year, namely, four times. This would give them a solid three months' run on what they manufacture and stabilize prices for all concerned. Right here let me add that one of the greatest factors in price cutting is the carry-over stock method so universally practiced by manufacturers who seem to think there will be a demand. The buyer or jobber realizes this condition and regardless of what his needs are he can always find what he wants, usually at his own price.

The skeptics may say that three months is not sufficient time to catch up on orders. My argument is that when this evil of carry-over stock is eliminated the buyer or jobber would be compelled to purchase his requirements at least four months in advance, allowing ample time for any factory of ordinary size to fill their orders. However, as long as the buyer or jobber knows he can purchase his wants almost over night, it is another story.

The time has long passed when the buyer can purchase his wants from nine to twelve months in advance of his needs. With a fluctuating market he is either a shrewd or an unwise buyer, whichever way the market goes. By the time he receives his merchandise his buy is a gamble pure and simple. The retailer buys from hand to mouth. Therefore, you can very easily see the wisdom of the four seasons' change-over, or cooperative and specializing manufacturing from the buyer's standpoint as well as the manufacturer's.

In groups two and three the volume of business for each change-over will not be so large, but what business done is at a profit, instead of running at a profit for six or nine months of the year, and even or at a loss for the balance of the year. This is only too true of many of our textile industries today.

The future of this industry depends entirely upon mills running at a profit, without which they cannot long exist. Cotton is here to stay, regardless of rayon or real silk. The loss of cotton in underthings is easily overcome in outer garments, and clever manipulations of machinery along lines outlined will keep cotton to the front and the wheels spinning to the benefit of all concerned.

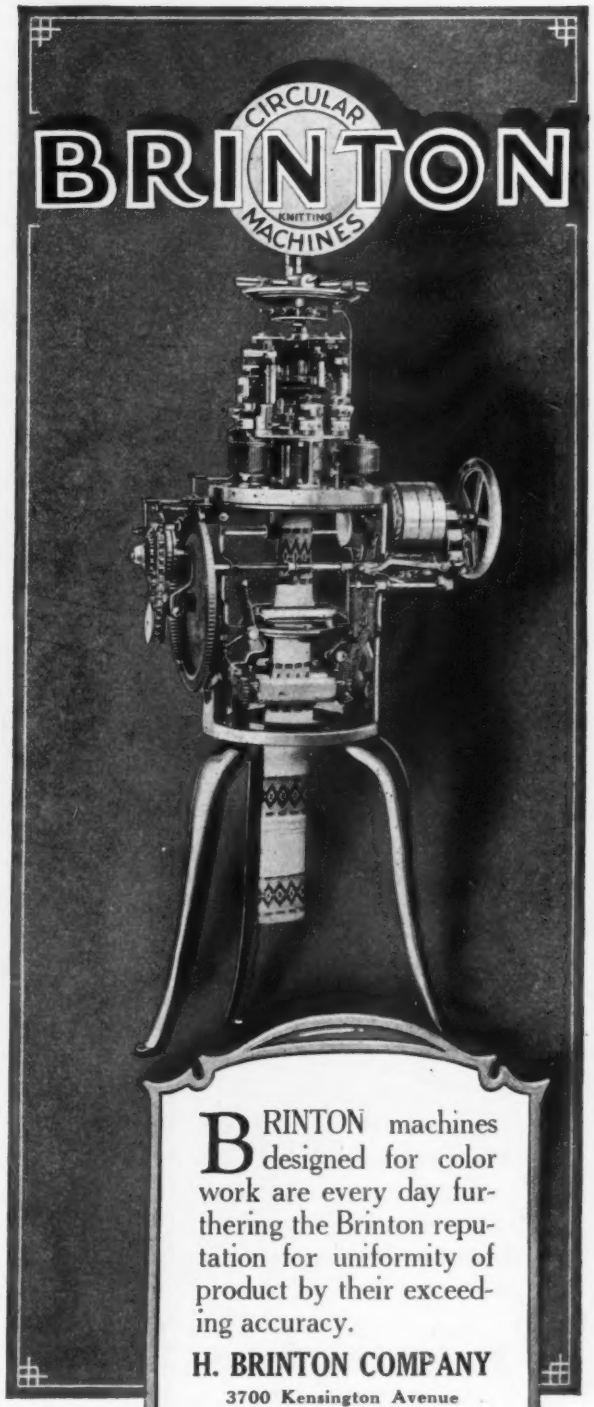
The old saying, "The proof of the pudding is in the eating of it" proves my theory in practice, because the writer has tried three and four changes in one year successfully and without much trouble.

CONTRIBUTOR No. 914.

SEVERAL COURSES ADDED AT GEORGIA TECH

The Georgia School of Technology, Atlanta, Ga., will offer several new courses along various lines of textile work this year. A full four-year course in textile chemistry and dyeing will be offered; this course including the full four years' work in the chemistry department of the school, with special work in the junior and senior years in the textile chemistry department under Mr. Jones. Opportunity to specialize in the various phases of textile manufacture will also be offered.

On account of the present wide interest in rayons, the school will offer an optional course next semester in the chemistry of cellulose, which will be followed by a course in rayon chemistry.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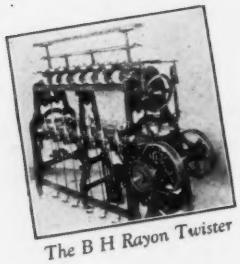

The B H Rayon Twister

twister in the class of conservative power users. Horizontal or vertical motor drive.

The 9 C Rayon Twister

A double deck of the BH, the 9-C Twister utilizes considerably less floor space. Vertical motor drive.

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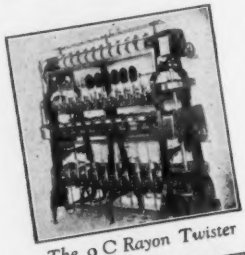
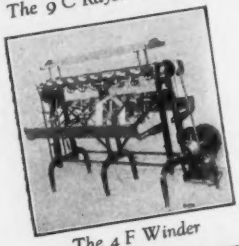


The 9 C Rayon Twister

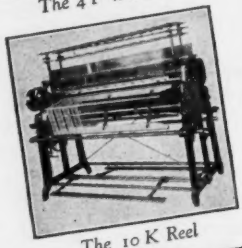
ATWOOD has fostered the production of Rayon since its advent as an industry. Atwood has always abreast of Rayon's progress, has guided its development from filament to yarn.

It was but natural that this should be Atwood's lot. Sixty years of studying and supplying the needs of the silk manufacturer have developed an organization producing eighty per cent of the world's silk throwing machinery. These sixty years of research and experiment have made possible our part in Rayon's success today.

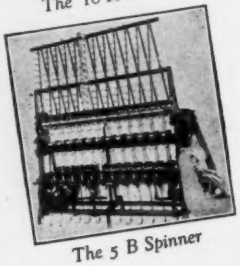
It is therefore with pardonable pride that we present these "Models of Perfection" responsible in a measure for the brilliant achievements of America's new Golden Fleece, rayon.



The 4 F Winder



The 10 K Reel



The 5 B Spinner

The 4 F Winder

A universally used winder for working hard or soft silk, rayon and fine cotton yarns. High and narrow, it requires only a minimum of floor space. Fitted with the patented Atwood Cam traverse motion with adjustable throw. Four styles of swifts are obtainable at the option of the purchaser, the regular stick swift, the friction hub adjustable swift, the patented gear adjustable swift and the new style wire adjustable swift. The 4-F may be built for any desired space, for any size or style of take-up bobbin, or any size of swift, either single or double friction take-up. Driven by either overhead belt to a three-step cone or by individual motor attached to the driving end.

The 10 K Reel

A "Model of Perfection" noted for its speed and accuracy of operation. The reel flys, having either four or six arms, are furnished from 42 to 54 inches in circumference, and hold from eight to twelve skeins each, according to specifications. Delivery spools placed above the reel fly eliminate tiresome back-bending. A foot treadle for starting frees the hands for more useful operations. The stop and count motions are worked by electric contact. Reel flys are stopped the instant a single end breaks or when the full length of skein desired has been reeled. Length of skein can be regulated up to 30,000 yards.

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Spins and doubles up to sixteen ends without lost efficiency in producing strand-perfect, precise, tightly wound bobbins of Rayon, Real Silk or Combinations. A large single 2-inch feed roll displaces the old style double roll. No loose or loppy ends. Traverse and change of twists are easily adjustable and all gearing well protected. Individual Stop Motion. Belt or motor drive.

Write for descriptive literature

The B H Rayon Twister

Has advanced the production of Rayon by increasing capacity for its conversion. The spindles whirl upwards to 7,500 R.P.M., releasing uniformly twisted threads with delicate accuracy. A reversible cross-head changes the direction of the twist without changing the direction of the motor. The BH frame is unusually rugged in construction, being adaptable to handling heavy rayon or artificial silk mixtures. Ball-bearings in the drive, foot-end and take-up shaft put this

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Getting the Correct Size Immediately After Oiling.

EDITOR COTTON:

With regard to the problem you recently published concerning trouble in sizing ladies' hose on Banner machines after oiling, the following suggestions may help to solve this difficulty:

When oiling sinkers, it is usually unnecessary to "flood" them, a few drops being sufficient, as excessive oil will naturally be transferred to the yarn and cause tight work. As proof of this, take an oiled cone, run off a stocking, and then take a regular cone and make a stocking on the same machine without adjustments, and note the difference in the length of the two. Too much oil will also soak the lint around the sinkers and needles and make tight work.

If the machines are equipped with web take-up, and the fixer is careless with the oil can he may get oil on the take-up mechanism where it is not needed, thus causing variation in the length of the work.

Again, it may be that the machines need more attention in regard to adjustments and cleaning than just the oiling at the usual time. I would suggest an examination of the stitch wheel to see if the tension pins are moving the same on each move for each stocking. The drum pawl may not be functioning uniformly. Using oil haphazardly will cause temporary variation. I would suggest an examination of the sliding bar and cap, parts 167-168, for free movement. It does not take much to make the bar stick.

If the difficulty does not seem to be in the machine, it may be that the yarns are varying more than the usual tolerance allowed.

J.T.(R.I.)

EDITOR COTTON:

In the August issue of COTTON I notice that "F.R. (TENN.)" is having trouble sizing work on Banner machines. He claims that the stitches seem to draw up occasionally.

I have handled Banner machines for 15 years and used all grades of yarns. I found that on string work the only satisfactory way to hold sizes on fabrics is to use the web take-up. I have found this to be about the only way to secure satisfactory lengths.

I suppose that "F.R." will notice that when the yarn gets low on the cones or bobbins that his lengths run on the long side. The web take-up will make the sizes uniform. See that the needle cylinder is lined up true and the stitch cam is as it should be.

See if the operators thread the machines the same at all times. Quite often the operator will arrange the yarns the way that suits them, not as the fixer meant them to be. This will give all lengths and sizes.

CONTRIBUTOR No. 4028.

Wide Spread Light for Outdoor Use.

The Wide Spread Light for general outdoor use—a 200-watt clear lamp—has been announced by the Holophane Co., 342 Madison Ave., New York City. This new light was especially designed to light outdoor areas, it is stated, and spreads the light out uniformly over wide areas instead of confining it directly under the light. It is weatherproof and dustproof, according to the manufacturers, who recommend it for factory entrances, shipping platforms, warehouses, etc.

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Natural, Dyed, Gassed, and Bleached

The Dixie Mercerizing Company's Trade Mark has come to represent the best in mercerized yarns to knitters and weavers everywhere — the result of consistent, year after year, production of strong, uniform, lustrous yarns.

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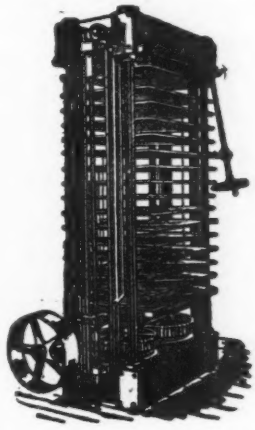

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No Equal Hosiery Company, Atlanta, Ga.

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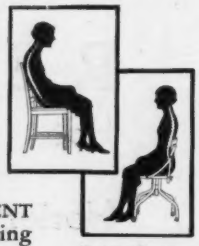

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The Yarn Market

Philadelphia, Pa., Sept. 15, 1928

THE MONTH preceding this writing failed to bring the business that had been desired and expected of it, in the Philadelphia cotton yarn market. The dull apathy that has engrossed the market for the past few months still continues with no immediate prospect of a change for the better. The sales remain slow due to a large number of consumer mills running on short time and the wide spread of prices on the same numbers of yarn. Many of the mills, that sell their products directly, are cutting the amount of commission that they would have to pay to a yarn seller from the price of their yarns, it is reported, and this profitless method of selling affected the whole yarn market with the result that there was still more confusion of prices. The Government cotton crop estimate had very little effect on the yarn market other than to have buyers hold off still longer to see what would happen.

The first week of the month preceding this writing opened with the carded yarns rates in this market away too low for the spinners. Some of the spinners gradually raised their asking prices and, for better than ordinary yarns, a new basis of 37 cents was established for 20s/2 carded warps. It remains, however, that low prices are still being quoted for ordinary quality carded yarns by some of the local dealers and direct selling mills. Nevertheless, all carded yarns appear on a better basis than a week previously.

The second week found the yarn market again unsettled; direct selling mills were quoting their yarn prices about two cents lower than the selling agencies. Thus, they were relinquishing the entire amount that would represent the market seller's commission and which, theoretically, they are supposed to be saving by discarding the dealer's services and marketing their output direct. This tends more than ever to make the market one for the buyer. It is declared doubtful whether the consumers are gaining anything by buying the cheaper yarns. There is some talk of the mills substituting lower grade cotton so as to be able to meet the prices the buyers offer.

The next week brought August to a close. The cotton yarn industry will now enter what should be the busiest part of the year with prices on a relatively low basis—so low, in fact, that in the opinion of experienced yarn factors, it is scarcely likely that yarn prices can be further reduced unless the bottom drops out of the cotton market. Spinners' gross margin for profit has largely been narrowed by new concessions which have been enforced by underselling competition from some of the direct selling yarn mills, short selling to a limited extent by market interests and liquidation of spot stocks of yarn in the several markets. It is widely agreed among yarn dealers that stocks of cotton goods have been substantially reduced and at the same time a potential demand for both goods and yarns has steadily built up.

The drop in cotton quotations after the Government crop report was offset, at least temporarily, by a more or less general movement among the carded yarn spinners to advance their prices. The result was considerable confusion in the local market as to what to quote. Seeking to benefit from the new decline in cotton, yarn buyers insisted on fresh concessions. Spinners were unyielding and showed signs of remaining so, at least through this week, apparently expecting cotton to rally or yarn demand to suddenly expand. Inquiries have been disappointingly small in most cases, indicating that buyers have again decided to wait. It was predicted by some yarn men that, should the spinners stick to their asking prices, next week should see a good many of the buyers raising their bids, as they are believed to need more yarn. Elsewhere it was said that the spinners by no means are in an independent position as to prices and should the expected demand fail to materialize by next week there is likely to be a new general downward adjustment of yarn prices. Spinners' agents state that, regardless of the latest decline in cotton, the yarn mills feel that the time has come to get some profit following several months of production, either unprofitable or at a loss.

Philadelphia prices on Sept. 12th follow:

Single Skeins.

4s to 8s	29½	10s	30
12s	30½	13s	31
16s	32	20s	33@34
24s	35	26s	36
30s	37		

Two-Ply

8s	30	10s	30½
12s	31	14s	31½
16s	32	20s	33½
24s	35½	26s	36½
30s	37	40s	43

Single Warps.

10s	31	12s	31½
14s	32	16s	32½
20s	33½@34	26s	37
30s	37½	40s	44

Two-Ply Warps.

		10s	31½
12s	32	14s	32½
16s	33	20s	34@34½
24s	36	26s	37
30s	38	40s	45

Frame Spun Carded Yarn on Cones.

8s	29½	10s	30
12s	30½	14s	31
16s	32	18s	32½
20s	33@33½	22s	34
24s	35	26s	36
40s	43½	30s dbl. carded	38
30s tying in	36½		

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	42	20s	44@45
24s	46@47	30s	47@48
40s	52@54	50s	56@58
60s	60@62	70s	70@73
80s	80@83		

Single Combed Peeler Yarn on Cones.

18s	40	24s	44
30s	48	36s	49
38s	50	40s	52
50s	56	60s	60
70s	70	80s	80

Mule Spun Carded Yarn on Cones.

10s	35	12s	35½
14s	36	16s	36½
18s	37	20s	37½
24s	39	26s	40
30s	41	40s	49

Mule Spun Combed Peeler Yarn on Cones.

10s	43	12s	44
14s	45	16s	46
18s	47	20s	49
22s	50	26s	51
28s	52	30s	53
36s	56	38s	58
40s	59		

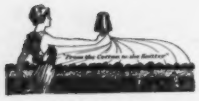
Carpet and Upholstery Yarn in Skeins.

8s and 9s 3-4 hard white warp twist	29½
8s and 9s tinged tubes	28
8s 3-4 hard twist waste	27

ADDITIONS TO INDUSTRIAL PERSONNEL

Industrial Rayon Corporation, Cleveland, Ohio, announce the appointment of Harold R. Barker as district sales manager for the New England states with headquarters at 730 Grosvenor Building, Providence, R. I. Mr. Barker will be assisted by Lanphear Buck, who has also had rayon sales experience.

Style



SALES REPRESENTATIVES

Northern States and Canada:
Waterman, Currier & Co., Inc.,
Boston, New York, Philadelphia, Chicago, Reading, Pa., Utica, N. Y.

H. B. Ketchum, Mgr., Export Dept., 42 Broadway, New York City

H. B. Robie, 93 Worth Street, New York City

Louisville Textile Co. Inc., Louisville, Ky.

David Whitehurst, 409 Parkway, High Point, N. C.

R. D. McDonald, 924 James Bldg., Chattanooga, Tenn.

In selling textile products style, beside quality is the important factor. It is for this trade, the trade which puts into their product every possible fine quality and then adds the profit building extra of style, that our yarns are made.

From the purchase of the new cotton to the finished yarn, American yarns are spun and mercerized under one supervision. This supervision and our specialized mechanical process makes a yarn of unvarying uniformity and strength—and the mercerizing gives the beautiful lustre which adds to your product every fine wanted quality, and the "sales-plus" of stylability.

Needless to say the beautiful, even lustre of American Yarns, their strength and their uniformity, are also the result of many years of experience with a huge production of more than 200,000 pounds per week. It is our system, our careful painstaking method and our long experience that give you exactly the same yarn each time you buy.

Another important point is that American Yarns are stronger after mercerizing than before.

It will well pay you to price American combed and carded yarns, all numbers.

AMERICAN YARN AND PROCESSING CO.

MOUNT HOLLY, N. C.

The Knit Goods Market

Hosiery

THE hosiery markets, having swung into their Fall stride even before the end of Summer, are attaining a degree of momentum that promises activity until at least the holiday business has passed into the background. Full-fashioned mills as a class are busier and seamless is doing better than for some time. Distribution is at a healthy stage, some little Spring business is developing and practically all lines of staples seem safely anchored for a continued good run, barring a generally upset condition such as at this time cannot be visualized by even the more pessimistically inclined.

Prices for full-fashioned silk hosiery have been steadily maintained. An exception is in featured lines which have been phenominally popular and came to be overproduced. For example, a manufacturer's reduction of pointed heel hose was announced, making the retail price $1.50 a pair, a markdown of 15 cents. The revision was not unexpected and passed without affecting general lines. The effect has been discounted by dealers. The line in question is sold to retailers direct from the mill, and it is noted that other makers of nationally advertised brands for the retail trade are adjusting their prices to more nearly a parity with those of manufacturers distributing through wholesalers. While there have been downward revisoins by some direct-to-the-retailer class of mills, there are no changes in the primary markets of a character to cause the slightest uneasiness in the trade.

There is one element with which the situation is not satisfactory—that class of jobbers which is being eliminated from distribution by reason of so many mills ordinarily selling to wholesalers only, are sidetracking them in meeting retailer demand for price goods in order to compete with department stores and large chain organizations. First to feel the effect of increasingly large distribution by chains were the department stores, and in the competition among mills such establishments had little difficulty in getting about as favorable prices as the chains. Next in line were the single unit retailers and specialty shops. In taking care of these latter, mills went over the heads of jobbers, and now many of the jobbers say they can find nothing which they might offer in competition with mills selling direct in greater extent than at any time in the history of hosiery distribution.

New Ideas in Distribution.

There are jobbers who would be willing to act as mills' agents, in a way, that is, mills carry stocks for them, ship direct and invoice the jobbers. Under this method the wholesalers would be relieved of carrying stocks, their investment being in samples only, and as their salesmen would cover wider territory and call on more dealers than a salesman for a mill, it is figured the plan might work to mutual advantage. But here enters the matter of price. Jobbers who have sought an opening of this kind say manufacturers are unwilling to name "right prices for either wholesaler or retailer." All of which recalls the plaint of manufacturers some years ago that jobbers were not functioning when they might. Many are not doing so now, mainly because so many manufacturers elect to distribute by the shortest possible route. Jobbers have created a demand which is not reflected in distribution generally—a demand with which only themselves are concerned and which may be a factor in sustaining mill values for standard hosiery.

Direct-to-retailer mills which are not agreeable to making lower prices aim at a solution of their problems through changes in construction or introducing some presumably appealing stunt in merchandising. J. C. J. Strahan & Co., Philadelphia, for example, in September brought out a line of full-fashioned silk hose with double toe, double in the sense that when the extra, or cap, is worn out it is removed, leaving the under toe good for average service. The stocking bears the name of Repeto and is designed to be sold at the counter for $1.95 a pair, costing dealers $14.75 a dozen. The consumer actually gets two toes. A manufacturer commenting on the innovation says he is prepared to see some one bring out stockings with two heels.

Another direct-to-retailer mill is ready to announce a garter innovation as a new talking point for his well-established line, and one proposes to make it easier for women to obtain any desired color. As all distinctive innovations are intended to be protected by patents, it looks to some as if the hosiery industry is likely to pile up a nice volume of business for the patent office.

Evidencing no let-down in demand for full-fashioned hose to sell for a dollar and up to $1.15 a pair, is the pressure on mills operating 39-gauge machines, which a year ago were viewed as having little value above what they might fetch if junked. Some were scrapped and others would have been but for the adaptability of this gauge to knitting Bemberg hose. As production of Bemberg increased there remained less equipment of 39-gauge for pure thread silk lines, and now most mills having it are running it day and night, some manufacturers are looking around for used equipment with which to increase their output.

It appears that potential production of dollar silk stockings is about at its peak, as 39-gauge machines are becoming increasingly scarce and new equipment is too costly for producing the very low price goods. That such is the situation is regarded as most favorable to manufacturers of the finer gauge silks. But, it is noted, a large store here and there is exploiting what is described as 42 gauge seven thread to sell for a dollar, for first grades. This probably represents

Trends in Full-Fashioned

WITH shipments of the new 24-section high speed short needle machines of the Textile Machine Works, in Reading, Pa., now going forward, full-fashioned hosiery manufacturers look for some to be on production in a very few weeks. A demonstrating machine has been in operation for some time at the plant of the machine works and among those who witnessed its performance there is said to be no doubt that the high speed and short needles already have proved every claim made by the company.

Necessarily, the machines have central drive and shock absorber. Improvement in the jack springs is said to have been achieved, and it is stated many new features have been combined with the more salient ones in former models. The machines are built for 60-70 revolutions a minute, which means a considerable increase in production per section. It is understood one of the first to operate the new machines in general practice will be the Pottstown (Pa.) Hosiery Mills.

The Colonial Knitting Co., Philadelphia, is installing 42 and 45 gauge Wildman full-fashion machines in a new addition to its factory at Mohnton, Pa., one or two sets being already in operation. The new building will accommodate 28 machines, and is to be filled as fast as they can be delivered.

The Nu-Craft Hosiery Mills, also in Mohnton, is installing nine of the Reading high speed 24-section machines. This is a new establishment representing local and Reading capital.

maximum grade and minimum price.

There is indicated slackened demand for 48-gauge hose. Manufacturers have had to meet price competition, and still there are holdings in some mills that seem not easy to move profitably, to makers. A mill near Philadelphia recently had an accumulation of 1500 dozens in the gray and shut down the 48-gauge division, stating it would make no more until what it then had were disposed of. Distributors balk at paying adequate prices for hosiery of this gauge, on the ground that it is not easily marketed in competition with 51, which costs them not a great deal more and more nearly conforming to ideals as to sheerness.

Some interests hold there is no place in the range for 48-gauge except it be knitted ingrain,in,say, three-thread silk. As many of the experiments with ingrain knitting have proved unsatisfactory, and demand for it is somewhat limited, because of price, comparatively few manufacturers are willing to undertake it. The Belle-Terry mill, in Reading, is knitting 48-gauge three thread dipdyed exclusively and is reported selling the production of its two sets of machines. But, it is pointed out, this company concentrates on one type of stocking and uses a form of packing that is calculated to promote sales.

Novel Way of Packing.

In the Belle-Terre form of packing, three pairs in a carton, there is an overlay of glacine for protection in shipping and at the counter when open cartons are displayed. Over the glacine are two narrow strips of stiff cardboard, one at either end of the carton, fitted into slots in the sides. These strips serve to hold the stockings firmly in place, preventing rumpling and mussing in shipment, besides acting as a bar to customers tampering with the glacine overlay, which necessarily leaves colors fully revealed. It is held that use of the strips under the Belle-Terre company's patent, makes it unnecessary to provide more than one size carton. It bears the earmarks of practicability and appears economic, particularly in its application to fine gauge sheer hose.

Some interests maintain that while there is heard dissatisfaction with 48-gauge there is room for it in the South, and it is understood that one or more mills are about to install a limited number of such machines. It is stated that because of their lower operating cost they can produce it for less than the cost of 42-gauge in most sections of the North. In this connection it may be stated, according to competent authority, that several new mills of which no announcement has appeared will be operating by the end of the year or early in 1929. They are said to be in process of equipping in North Carolina and Tennessee. Reports reaching northern market centers are to the effect most southern full-fashioned mills are operating on much extended worktime schedules. That this ought to be the case is indicated by the activity in Philadelphia and Reading.

Numbers of the smaller mills in Philadelphia are on 24-hour day schedules, producing mainly chiffon and sheer service weight. The Olympia, with 11 machines, will add nine. and the Whitehall, operating 19, will install three. Both operate night and day. The Triple-Wear mill in September effected a change by which production is increased by 160 dozens a day. Conditions in the three mills are typical of those in nearly all, with the exception of the very large, and some of these are burning the midnight oil in operation of plants.

The Traymore and Busy Bee mills in Reading, the latter distributing to retailers direct, are putting in full weeks. with practically no stoppage from beginning to end, and the Gold Seal, on overtime schedules, has contracted for additional equipment. The Berkshire Knitting Mills is operating all available 39-gauge machines on Bemberg and the other departments are at capacity basis. Another busy mill in Reading is that of the D. S. & W. Co., which has tentative plans for another mill. The Reading Full-Fashioned will build a larger mill and increase equipment, plans having been accepted a few weeks ago.

Opinion is divided on the question whether Bemberg hose is gaining or losing ground in competition with low price threadsilk. Several manufacturers say it is hot, that production is short of demand. Some few have discontinued knitting Bemberg, on the ground they did not have satisfactory results. It is agreed among those who hold to the affirmative view on the question of Bemberg's continued popularity that only a few manufacturers have solved the problem of knitting it successfully and economically, that there were encountered difficulties which they themselves were some time in overcoming. The Burd Knitting Mills, probably distributing more Bemberg dollar full fashioned than any other wholesaler, state that all they can obtain of the Berkshire output is about one-third of what they could sell.

A Philadelphia department store which had been selling Bemberg hose from two mills has discontinued both lines, the management stating there was a too large per cent of goods that had to be returned. This store has substituted for the dollar price a full-fashioned stocking of silk and rayon in 50-50 proportion. It comes from an interior Pennsylvania mill which has had a large trade with a leading chain organization and which a year or more ago was mentioned as having booked the largest single order ever placed with any mill.

Some manufacturers of silk-rayon hose for women are operating plants overtime, and their shipments are reported increasing. Mills knitting Dulesco, the Viscose Company's dull-luster yarn, also are well situated as to orders. According to the most trustworthy mill statistics available, output of full-fashioned silk rayon hose is steadily increasing, July showing substantial gains over the corresponding month of 1927. Seamless rayon was falling behind until Dulesco yarn came into general use, while seamless silk-rayon is moving ahead. Reports from identical mills show that full-fashioned silk was in slightly less production in July than in June and made only a small gain over July of last year. This showing is accounted for by the summer curtailment, more radical than ordinarily.

It is estimated by an establishment that goes deeply and carefully into statistical information that the present output of full-fashioned hose is around 24,000,000 dozen pairs a year, or about 12 pairs a year for females of silk hosiery age, this latter estimate being predicted on the census of population. While accuracy of statistics seldom can be depended upon, it is believed by important factors that the figures presented are sufficient for showing that the saturation point in production has not been reached. It may be if the bare leg fad next year develops to only 50 per cent of current prediction.

Bootees and the Bare Leg Fad.

Bootees, or sport socks, for women seem to have supplied an inspiration for bare legs. The fad assumed important proportions this year on the Pacific Coast, spread in mild form to Chicago and other central west cities and, in still milder form, touched the East. It is being helped along by seemingly unnecessary wide discussion in trade publications reaching retailers, and seems pretty certain of an outbreak on the Atlantic Seaboard. In the event it does, it will be promoted by an element among women that is a large consumer of silk stockings, more particularly in the lower price grades. If it enmesh only ten per cent of this element, it appears obvious the effect would be felt in sales of rational hosiery. For illustration, 125 girls and women employed in a Philadelphia textile mill this summer wore no stockings while at work. It was reasoned by the management that as they worked eight hours a day and probably devoted eight hours to pleasure and recreation, they were effecting a saving of 50 per cent in their stocking outlay.

When first the bootees made their appearance they were worn over silk hosiery as a sort of protection, on sport occasion. Then the idea of wearing only bootees was conceived and soon took root. Some women even discarded the socks, but this was found a bad move, from the standpoint of comfort. So the sock was retained for saving shoes from the effect of perspiration and as conductive to foot comfort. So it may be that only three fourths of bare leg will be exposed in the event the socks become popular.

They are on the market for next year in misses' lines and a few manufacturers are preparing for a demand for women's wear and giving little attention to styling the tops. As woman dresses to please, it may not be long before she discovers that stockingless legs will be more ridiculed than admired, and the bare leg fad may be regarded as promising of no prolonged existence, say mature well poised persons with whom the matter has been discussed.

That young misses will next year wear the socks instead of stockings seems no idle guess. There are manufacturers who, at any rate, assume they will, and are preparing for a misses sock season. There is, however, preparation for normal demand for long hose and seven-eighth length, in which plain color legs and pattern tops are indicated. More mills are installing machines on the Jacquard order, encouraged to do so by the fact the matter of styling is receiving so much attention from the trade and machine builders. The Schuylkill Hosiery Mills, in Reading, has equipped 30 machines with Jacquard attachments for infants' socks for the element that pays from 75 cents to a dollar a pair, and is booking some business. The mill also is showing first samples of boys' golf hose for which 50 machines are being equipped with the Jacquard device. The infants' socks are in conservative, chaste design, while the golf stockings represent a wide range of coloring and patterns on the extreme order. A Philadelphia mill is specializing for Spring with boys' golf hose in seven-eighth length, intended to sell at the counter for 50 cents a pair. The line is stamped "full mercerized."

Spring trading in infants' socks has developed somewhat slowly, but is steadily improving, and the outlook is for the best season in years. Jobbers have been timid, and, in instances, voiced strong objection to the prices of the better grades. A manufacturer who installed new equipment for producing a strong line of five-eighth length socks a few weeks ago "fired" his selling agent, who took sides with customers on the price question, and is selling direct, with, he states, fairly satisfactory results. The five-eighth straight leg with fancy top is regarded as one of the better models. models.

Novelties Still Good in Half-Hose.

Fifty-cent novelty continues the volume seller in men's half-hose. Even at that, distributors are buying ultra-conservatively, and some of the mills better known for their patterns are not under pressure for deliveries. Several manufacturers making both the half-dollar and higher price lines declare there is an increasingly thin outlet for goods to sell for 75 cents and more. Those selling to retailers are taking the bulk of the high-price business, but it is stated their shipments do not measure up to those of last year. This may be accounted for by the fact that what was, virtually, the 75-cent sock not so long ago is now in the 50-cent bracket, and the former standard half-dollar seller goes over the counter for 35 cents. It seems mills prices must be made to suit jobbers, and they appear to reckon the widest possible margin of profit for both themselves and the retailers.

According to forecasts of stylists, fancy half-hose to be popular next Spring and Summer will have to show more careful attention to the matter of color blend than pattern. As is pointed out, a good pattern may be side-tracked by the trade if there are too many colors or improper blending, and it is held that while man may have a weakness for sports effect, he does not relish it in his socks. Conservative stripes and panels, with here and there a touch of straight line designs are picked by stylists as likely to predominate.

It seems that commitments for wool mixture half-hose must await a signal from weather conditions. Orders thus far placed are far behind those of 1927 to the end of September, some manufacturers estimating the drop for the season at fully 50 per cent. There are mills reporting satisfactory business, but they represent a small minority. Samples of 6-3 ribbed half-hose from British and French mills are shown by one establishment with a view to encouraging their production in American mills, more particularly of fine lisle construction. They could not be sold at domestic popular prices, and this would seem to leave them as only a weak probability. The bulk of the foreign made novelty half-hose that matches the American product in design is made on American machines, is the opinion of a manufacturer recently returned from a careful survey of what is going on in the leading hosiery centers of England and the Continent.

Underwear

Happenings in the underwear primary markets during the month just past presented nothing to indicate any change of attitude on the part of distributors or improvement in conditions from the manufacturers viewpoint. As to men's heavy weight cotton ribs, it appeared as if jobbers were more influenced to defer seasonal buying by the decline in cotton following the September government crop estimate. It seemed to be overlooked that the underwear which will go into consumption this Fall and Winter will not be made from cotton acquired by mills since the crop report came out. But it was apparent there was a disposition to withhold commitments in the expectation mills might tire of the waiting and make concessions.

Some fair-size repeat orders for ribs were taken, at prices not disclosed, but presumed to show no break. Several buyers who were feeling out the market said their reason for placing no business was the holding back by the retail trade. Most dealers, they represented, have bought only a small fraction of their prospective needs, and it was stated that many who have made practically normal commitments are taking the goods in dribs. Buyers explained that so long as they were receiving so little encouragement from retailers they would do little more than place fill in orders for preserving assortments unbroken. They believed, some stated, that prices would be reduced if there were further downward fluctuations in cotton, while feeling quite certain there would be no advances.

A Philadelphia jobber who was asked if there was not a possibility of a scarcity for spot delivery, should buying be much longer put off and severe weather set in suddenly, said he could conceive that mills having stocks so light that there was no danger of any carryover, might exact a premium for immediate shipment. If they do, he added, the jobbers simply will have to get the premium out of retailers. This, he said, would not be so easy but for the fact, he believes, than that few if any jobbers have stocks for meeting an emergency and that if manufacturers penalize delay jobbers will be in position to pass the buck.

According to some representative manufacturers, their shipments of cotton heavies this year will show a falling off from 1927, due in part to a broader use of light weights, it is stated, and the fact that men are wearing the latter until later in the year, using the three-quarter length Summer garments as their medium weights. Underwear stylists are laying importance to the use of mediums for Spring and Fall, and this is possibly a factor in the belated seasons for donning the heavies.

Summer underwear may be said to be fairly active, but as there is so wide a diversity of types, the business must be distributed among more manufacturers, so that while there appear quiet spots, in reality the aggregate of the business represents fully normal value. There is heard some comment on the lateness of manufacturers of nainsooks in naming prices for the next season. In some quarters there is predicted a severe falling off in the use of nainsook athletic suits, track pants and knitted athletic shirts presenting a semblance of a monopoly. It is regarded sigificent that several hitherto manufacturers of nainsook and kindred lines exclusively are exploiting the knitted.

Nainsooks lost some ground this year, it is stated by distributors, although it is reported that in one well known branded line last year's status was about maintained. Cottons, whether of woven or knitted fabrics, seem destined to be pushed still further toward the background by rayon, the one fiber that gets the benefit of so much gratuitous publici-

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HOSIERY manufacturers, engaged in the refinement of color are finding that STRICKLAND SAMPLE DYERS perform an improved service which is necessary under present-day competitive conditions.

Strickland Machines are capable of handling a wide range of colors with quickness and accuracy. They are so constructed that goods are under the solution all the time—assuring perfect penetration and uniformity of coloring that instantly wins admiration.

Construction: Monel metal throughout except bronze shaft and coils. A scientific drop bottom prevents hanging up, at the same time aiding circulation.

All Stricklands can be equipped with individual motor drives if desired. Write for information.

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STRICKLAND
SAMPLE DYERS

ty that it stands out predominant. Following close on the heels of the exploitation of Bemberg underwear comes Sase which was given its introduction in some leading department stores in September.

John Wanamaker's put children's Sage underwear on sale a few weeks ago, in sizes from 4 years to 18, and priced from $2.50 to $3.20 for combination suits. The fabric has the sheen of silk, having, however, the appearance of silk in mixture with cotton, and is claimed to be fully as absorbent as the latter fiber. It is made by Thomas Dalby Co., Watertown, N. Y.

Pennsylvania manufacturers of women's cotton underwear—those who have survived the competition with rayon—say sales and shipments are fully abreast with those of last year. They are well supplied with orders for medium weights and say they have reason to anticipate the usual volume of business in summer weights.

Sweaters

Repeat orders for shaker knit coats are said by manufacturers to be a full month late this year. Being the heavier garments, they bore the onus of price advances which are announced about the 1st of July, but not adhered to by all mills. As some were bidding for business at former prices, jobbers were led to believe the advances may not have been wholly warranted, and with price competition prevailing, there was no hurry to place orders. There remained in September a considerable unfilled—undeveloped demand, to be taken care of in October and November. It will be the latter month, probably, when the peak distribution will be attained.

Sport coats in the lighter weights, less affected by the higher prices of yarns, represent the bulk of current business. A few mills are operating at capacity basis, many are doing little better than getting off half-time production. Jobbers whose road men have been active say sweaters promise better this year than in 1927, and some in the East who ordinarily are late with duplicate orders have repeated. Manufacturers believe buyers have a mistaken notion that potential production is sufficient for meeting any emergency, and hold that any sudden drop in temperatures to a seasonal level would serve to refute this idea. That there will be sweaters aplenty is not disputed, but from present outlook orders received after the middle of October will have a slim chance of getting spot shipment.

Bathing suits opened disappointingly to most mills. Staple lines on which no advances over last year were made are being traded in, but in conservative fashion, while distinct novelties, of which there is an abundance, are reported lagging, buyers objecting to what appear higher prices. Sponsors of such lines had looked for whirlwind buying, because of new and striking features. It develops that buyers are wary of an excess of stripping and patchwork intended to emulate the futuristic. As dealers this year finished the season with practically no carryover, manufacturers, while eager for more than mere sample orders, feel they can await buyer convenience with little risk, that is, provided the too eager do not again resort to price cutting.

LATEST EDITION OF BLUE BOOK IS READY

The 1928 edition of Davison's Textile Blue Book, with which is consolidated Dockham's American Report and Directory of the Textile Manufacturing and Dry Goods Trade; has been issued. All mill reports, etc., have been carefully revised and brought up-to-date. One new feature is the inclusion of statistics showing the number of spindles, looms, cards, etc., in the mills of each state in this country. In addition to the regular mill reports, a separate list of new mills is included. Another separate list shows the mills equipped with dyehouses.

The office edition is in heavy cloth binding, and the price is $7.50 per copy. The handy edition, with practically the same information in it except the classified directory of mills and textile buyers' guide, is $5.00 per copy. The salesman's directory containing a full report of every textile mill, dyer, finisher and bleacher, arranged alphabetically, is $4.00 per copy.

Copies of the directory may be secured either through Cotton's book department or direct from the publishers, The Davison Publishing Company, 50 Union Square, New York City.

Among the Knitting Mills

THE Arcadia Dyeing Company, Paducah, Ky., has let contract for a hosiery and skein dyeing plant, which will be installed for commercial processing of yarn and knit goods.

The Claussner Hosiery Mills, Paducah, Ky., are having plans made by Lockwood, Greene & Co., for building a $20,000 dyeing plant.

The National Hosiery Mills, New Orleans, La., are now operating with 145 latch needle knitting machines, 44 ribbers and four sewing machines.

The Golden Belt Manufacturing Co., Durham, N. C., has begun work on an extension to its building and will add 18 full-fashioned hosiery machines to its equipment as soon as the building is ready. The expansion will give the Golden Belt company more than 50 full-fashioned machines.

The Knit-Well Hosiery Mills, East Durham, N. C., are reported to be adding 45 new knitting machines and 12 loopers to their equipment. Room in the building was made for the additional machines by making a storeroom in the basement 35 x 50 feet.

Sevier Knitting Mills, Sevier, N. C., recently incorporated, expect to have the plant they are building completed soon. It is said that the plant will be equipped with 25 knitting machines and seven loopers for the manufacture of men's seamless hosiery.

Thirty knitting machines, formerly operated at the Mebane, N. C., plant of the S. Y. W. Hosiery Mills, have been moved to the Burlington, N. C., mill of the company and put in operation. These machines are housed in a new building recently built to accommodate them.

Mt. Airy Knitting Company, Mt. Airy, N. C., has added rayon underwear to its line. At present the mill has 20 sewing machines and is purchasing cloth. It is planned to install 12 knitting machines early in 1929.

Clon-Whis Hosiery Mill, Hickory, N. C., recently started operation with 20 knitting machines and supplementary equipment. It is planned to double the capacity of the mill in a short time.

The Esther Hosiery Mills, Graham, N. C., have installed 20 knitting machines and others are to be added later.

It is understood that the new full-fashioned hosiery mill to be built at Chattanooga, Tenn., which was originally called the Alton Park Hosiery Mills, will be incorporated as the Bryan Hosiery Mills. Work on the first unit is progressing rapidly.

Several sites in Virginia are being considered by the American Rayon Products Corporation, 176 Madison Ave., New York, as a location for a rayon underwear knitting plant.

Interwoven Mills, Martinsburg, W. Va., have let contract for addition to the hosiery plant on West King St., the addition is to be 120 x 75 feet, two stories high.

TRADE-MARKED UNDERWEAR FOR THE SOUTH POLE

Commander Byrd's trip to the Antarctic is equipped with everything necessary to make the expedition successful. No exploration ever undertaken equals this one from the standpoint of preparation.

The Allen A Company, Bennington, Vt., donated 60 suits of light underwear to be worn next to the skin. These union suits are made from a standard fabric, 60 per cent silver woolen worsted for protection against cold and 40 per cent cotton to prevent shrinkage, a combination resulting from years of experience in the operation of Cooper spring needle knitting machines, manufactured by Charles Cooper Company, Bennington, Vt.

The woolen underwear donated by the Lackawanna Mills, Scranton, Pa., was marked by Kaumagraph transfers. Thus, Kaumagraph transfers push on to the South Pole—one place in the world to which they have not yet penetrated.

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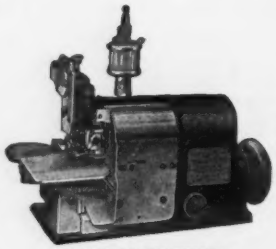

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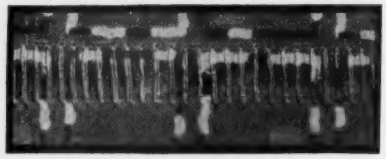
For simultaneously trimming and joining ends of cotton, silk or woolen piece goods with a

FLAT BUTTED SEAM

Permits goods to pass through finishing machines, uninterrupted, for such operations as Shearing, Calendering, Mercerizing, Bleaching, Dyeing and Printing—with *remarkable saving*—both in labor and fabric.



Butted Seam, natural size, made by STYLE 60 ABB MACHINE on Cotton Goods which have been subsequently processed. The STYLE 60 D3B makes a similar though much wider seam designed for use on sleazy or loosely woven goods to insure holding.

OTHER RECENT DEVELOPMENTS—FOR THE RAYON TRADE

STYLE 60 RD —For a three-thread overedge finish, either straight or scalloped, on Rayon Bedspreads and other sleazy articles on which the ordinary edge finish will not hold.

STYLE 60 JDC —For two-thread **FLAT SEAMING** on Rayon Underwear.

Let Us Demonstrate the Work of These and Other Machines on Your Own Fabric.

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GOLD CIRCLE NEEDLES

NO MORE ROUGH RIVETS

Our new needle with the rivet Brazed to the cheek does away with them. The needle lasts 3 times as long.

More and Better Knitting

because they are always smooth.

If you have not seen these improved needles or tried them, ask for samples.

Patent applied for

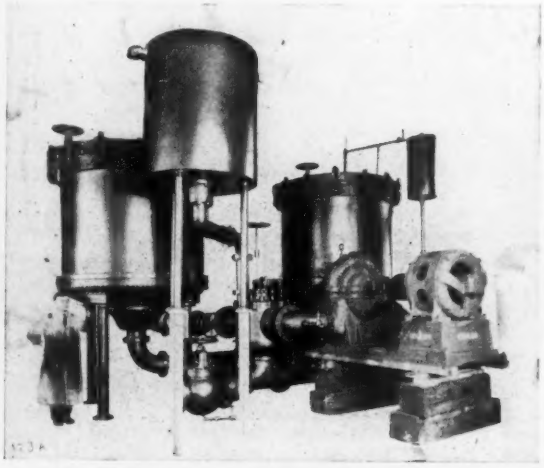
MANUFACTURED BY GRANITE STATE NEEDLE COMPANY LACONIA, N.H., U.S.A.

N C

Franklin Installs Largest Commission Yarn Dyeing Machines

THE increased use of color in recent years has made mass production a necessity in commission yarn dyeing, because of the fact that many colored cotton fabrics are today made with solid ground either in the warp or filling or both. All the ends in such a fabric must be from the same dye batch to assure perfect goods. A similar problem is encountered in dyeing yarn for multi-colored pile fabrics. The colored yarn used for the pile fabrics runs into very large poundage at times and here again all the yarn used in one piece of fabric must be from one dye batch.

One solution seems to be larger yarn dyeing machines, particularly in view of the importance of the time factor in today's market, and in response to an insistent demand from its customers the Franklin Process Company has built and installed two such machines, one in its Providence plant and one in its Philadelphia plant. These machines will dye from 2,000 pounds to 3,000 pounds of cotton yarn per batch. They operate on the well known Franklin Process principle. That is, they dye the yarn in the



The New Franklin Process Yarn Dyeing Machine, With 2,000-3,000 Pounds Capacity. Note Comparative Size of Man in Left Foreground.

Franklin package or wound form. Two thousand Franklin packages with a six inch traverse approximately one pound of yarn to a package) can be placed in a machine at one time or 4,200 Franklin packages with a three-inch traverse (approximately one-half pound of yarn to a package).

As the illustration shows these machines are built with twin dyeing kiers, to facilitate loading and unloading. It has been discovered already that these large machines can do perhaps ever better work than the smaller Franklin Process machines, it is stated. This is no doubt due in part to the fact that the machines are equipped with unusually large and powerful pumps which effect an unusually thorough distribution of the dye liquor and practically perfect penetration of the cotton fiber. This latter feature is particularly important to plush manufacturers as it should enable them to make a pile of deep rich color and with an unusual amount of luster, it is pointed out.

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MERCERIZED
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Single Yarns
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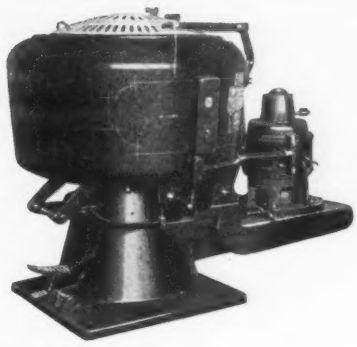

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FOR treating rayon—for removing soaking solution from pure silk—for small lots of skeins—for hosiery or piece goods—you'll always find the American Underdriven Extractor ready to handle the job. You can select the right machine for your needs from six basket sizes—20-24-26-28-30 and 30 inch special deep, suited for loads of from 20 to 75 pounds. Write for details.

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Eight Step—Six Color
Diagonal Patterns

An exclusive method of needle control, found only in Standard Hosiery Machines, assures positive operation and eliminates floating threads in reverse plating diagonal striped and figured hosiery. Patterns, like the one illustrated, are at your disposal in countless designs and color combinations for Ladies' Sport Hose, Boys' Sport Hose, Half Hose, Infants' Sox and Infants' Cuff Top Stockings.

Write for description of our new method of needle control and other information about Attachment 31,—no obligation.

STANDARD-TRUMP BROS. MACHINE CO., Wilmington, Del.

DISTRICT OFFICES

366 Broadway
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James Building
Chattanooga, Tenn.

Slashing and Weaving Discussion

(*Continued from page* 1230.)

they are on colored work, with the cloth blanket it would be necessary to make frequent changes. He simply builds up his rolls with more yarn as they wear.

Mr. Riviere reported the use of an 18-ounce blanket. He said after the questionnaire committee had included the reference to rubber rolls, he went home and took a roll from a dye machine and tried it, "but it was absolutely unsatisfactory. It wouldn't put any size into the yarn; it simply plastered it on."

"Has anyone tried the difference between the twill weave and the plain weave slasher cloth?" asked Mr. Elliott.

Dennis Uses Longer Blanket.

"We have been using the plain or super-fine slasher cloth for about three or four years," replied Mr. Dennis. "We formerly used a short blanket, four or five yards, with the twill weave slasher cloth of the heavier weights, and we found we were getting, on our class of work, some excessive blanket marks, and we changed to a 13-ounce super-fine slasher cloth, with an average length of seven yards all of the time on the squeeze roll. We do not want it to get below seven yards. On some types of cotton we put as much as nine yards on in order to get the same results on our slashers. Some cottons take on more size than others. We think the super-fine is away yonder better.

"When we increased the length of our blankets we did it with the idea that we could get better uniformity. The blanket must be firm, and where you start out with five yards of blanket and trim six inches off of there to eliminate blanket marks, you have taken away a larger percentage of the cushion than with a longer blanket, so there is less variation due to trimming. In addition, to get the same weight added to the yarn on the slashers, we find it necessary to use a little lighter consistency of size so it will be more nearly the same all the way around. We feel that the present hook-up we use is a little bit better than anything we have ever tried."

Mr. Dennis said that the longer blanket will last more than long enough to justify the additional cost, in response to a question from Mr. Heymer. He pointed out that, "we do not worry about the cost of covering our squeeze rolls, because our whole mill is dependent on our two slashers, and we wouldn't feel like fussing about a few dollars there, if we could save several times that much in the weaving by getting the right kind of work from the slashers."

In response to several questions from Mr. Grimes regarding the worsted yarn covering, Mr. Harvey stated that he builds up on it about twice a week. He said the yarn does deteriorate, and that he tries to build it up before this happens. He said at first he had some trouble with the yarn wearing down in grooves, causing two or three ends of yarn to have heavy size on them.

Hames Uses Three Small Immersion Rollers.

The next question was, "Have you made any change in your immersion roll? If so, tell in what respects and with what results."

J. W. Hames, superintendent, Exposition Cotton Mills, Atlanta, was called upon, and explained that to replace the regular one brass roll, he installed three smaller rolls, made

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of two-inch brass pipe, and the yarn goes over and under these, giving the size a chance to penetrate from all sides of the yarn. "We find a difference in the feel of the yarn on the front," he said. He had some difficulty on light sets, getting the yarn to go through straight, but did not experience any trouble on sets of 2,500 to 3,000 ends.

Automatic Control in the Slasher Room.

"What has been your experience with automatic control in the slasher room?" was the next question, and R. M. Matthews, superintendent, Peerless Cotton Mills, Thomaston, Ga., submitted the following report:

"Automatic controls were installed on cooking kettles, size boxes and slasher cylinders in November 1926, and up to this time, with the exception of a few minor adjustments, we have had no trouble. We have had to do excessive cleaning on the instruments on account of using galvanized pipe on our air supply line, the scale inside the line clogging the vital parts. Brass pipe would eliminate this.

"As to the cooking controls, the instrument is so constructed that it can be set to bring the mixture to a boil in any given length of time which you may desire and then hold it at the boiling point any length of time. It requires only a few seconds to set the instruments, and both operations—that of bringing to a boil and the length of time of cooking—can be set at the same time.

"I will not go into the minute details of this instrument, but will call your attention to the two diaphragm valves on the steam lines leading to the cooking kettle. The first one automatically opens when the air is turned on, this allows the steam to go into the kettle. The second valve automatically closes should the air fail direct from the pump, which keeps the mixture from coming to a boil too quickly should the air pump break down or the power go off. In case the air is off the mixture can be cooked by hand through a by-pass.

"The size box control is very simple and can be set to the desired temperature in a few minutes. Once set it is not necessary to re-set it. The thermometer is placed on the opposite side of the box from which the size enters and the control is set at 198 degrees. The temperature at the point of the thermometer never varies over two degrees and numerous tests show that there is only a slight variation in temperature in any part of the box.

"The cylinder control is operated by the variation in the temperature of the condensed steam (water) as it is expelled from the cylinders, and a recording chart shows the temperature of each cylinder separately at all times. The steam pressure on the cylinder varies considerably, but tests for a period of two years show that the percentage of moisture content in the yarn never varies over 3-4 of one per cent.

"Very recent tests in early morning and around noon every other day show: 6:30 A. M., 8.45 per cent moisture content; 11:30 A. M., 8.20 per cent moisture content, a difference of .25 per cent or 1-4 of one per cent variation. This is on 5,760 ends of 23s yarn for 90-inch goods, speed 25 yards per minute. Another test, 6:30 A. M., 6.99 per cent moisture content; 11:30 A. M., 7.19 per cent moisture content, a difference of .20 per cent, or 1-5 of one per cent. This is on 21s yarn, 4,284 ends, for 63-inch goods, speed 27 yards per minute.

"Uniform cooking, uniform application, and uniform drying are obtained, which means a great deal toward good running work. The slightest variation in cooking and drying can readily be detected from the recording charts.'"

In response to a question from Mr. Elliott, Mr. Matthews explained that the method of preparing the yarn for the test was to cut a piece off of the warp at the front, seal it in a jar and send it to the laboratory.

"When you change from say 5,000 ends to 3,000 ends, or make a difference in the number of ends, what difference do you make, and how much, to take care of your control on the cylinder?" asked Mr. Grimes.

Mr. Matthews explained that he does this by changing the speed of the machine only. "Through constant practice and experiment," he said, "we have a record on the floor under the cone, No. 1, No. 2, No. 3, position, etc., and this chart shows what position the belt should occupy on the cone for running each style." He added that an engineer from the instrument manufacturers had checked their figures against his and found them to co-incide closely.

Mr. Elliott brought out that of course he tries to carry the same amount of moisture in the finished warps, and Mr. Matthews replied affirmatively, adding that he could raise the figures quoted, if desired; he understood some were putting in as high as ten per cent. "We haven't had a wet warp since these were installed," he said.

"I have something similar to Mr. Matthews," reported W. L. Phillips. "I have had it for about five years, and we wouldn't attempt to run a slasher without one. We leave practically the same amount of moisture in every warp. We go up as high as 9½ per cent. We used to get between four and five per cent, and now we have much better results. We use a certain temperature and a certain speed for each set, which we arrived at through experiment. Our steam pressure will vary from twelve down to two pounds between morning and night, and yet the moisture put in is the same." Mr. Matthews added his approval to the statement regarding the constancy of the moisture content regardless of steam pressure variation.

"We have a system of temperature control on kettles and size boxes at Lanett," said R. J. Jennings, "and on some of the cylinders. It is just like Mr. Phillips said: when we first started experimenting with the temperature controls on the cylinders we checked one set and had a variation in moisture content, but since we put the regulators on we eliminated all of the trouble, and we get a more evenly sized yarn and a more evenly dried yarn."

"Do you have it on both cylinders?" asked Mr. Elliott. "Yes," replied Mr. Jennings. Mr. Matthews said he has them on both cylinders, and that there is a difference of about eight degrees in the temperature of the two cylinders. Mr. Elliott asked if it was necessary on both cylinders, and Mr. Matthews replied that the small additional expense in equipping the second cylinder was more than justified.

Dennis Cuts Laps at Doffing.

The last question discussed was, "Is it better to pick up loose ends on section beams in slasher creels at any time, or to wait until the beam is doffed?"

Mr. Dennis reported on this, saying that he waits until just before doffing to cut his laps, finding that this provides a better and more uniform moisture content, since it is all run at the same speed and without stopping, and that this makes the laps come up in the weave room instead of going under. Mr. Rogers asked what he did when a lap finally built up and fell over, and he said on his work he rarely had this, but if it happened he would stop to cut the lap rather than not for the sake of carrying out the original plan. He also said that they could estimate fairly closely that they were getting the laps at the right time.

This concluded the slashing discussion. The final feature of the meeting was a talk by John A. Simmons, agent, Lanett Bleachery & Dye Works, Lanett, Ala., who offered suggestions to the mill men as to various points to be watched about goods going to finishing plants, in order to prevent difficulties there. His suggestions appear elsewhere. Following Mr. Simmons' talk, and some discussion on it, the meeting was adjourned.

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Celanese brand yarn goes through the machine for hours without a break

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It is absolutely uniform—and always so

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The dyestuffs used for dyeing Celanese give colors that are unusually fast to sun, suds, salt-water and perspiration

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Deniers 45 to 300 and upward

[CONTINUED ON FOLLOWING PAGE]

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{ and Profits }
from Celanese brand yarn

{ CONTINUED FROM PRECEDING PAGE }

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Celanese sells rapidly because of its exceptional beauty, soft touch, durability and unique hygienic qualities

It has many unusual advantages

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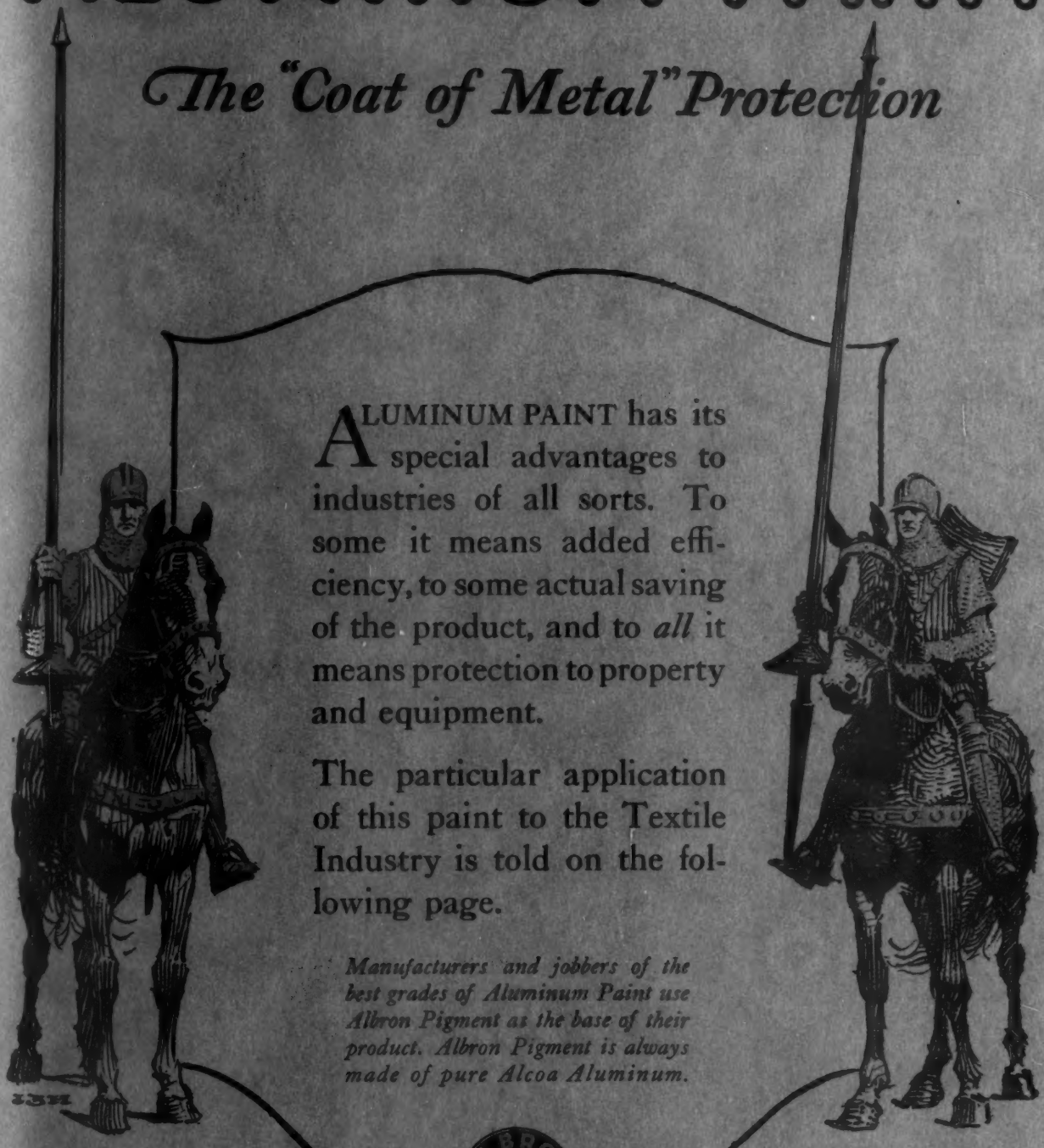

ALUMINUM PAINT has its special advantages to industries of all sorts. To some it means added efficiency, to some actual saving of the product, and to *all* it means protection to property and equipment.

The particular application of this paint to the Textile Industry is told on the following page.

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ALUMINUM PAINT is being used extensively on houses and factories by industrial communities not only for the comfort of the employees but as a durable protection against rain, snow, sun, fumes and gases. For roofs Aluminum Paint is especially effective, for, in addition to its protective advantages, it reflects the heat, keeping the interiors cooler and more comfortable.

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H. Gilmer Winget, Superintendent,
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A Fast-to-Light Direct Dye

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National Solantine Gray GL Conc. is equally as suitable for rayon as for cotton and is recommended for use alone or in combination for the production of a wide range of shades. Having practically no affinity for the animal fibres, it is particularly well suited for silk white effects. Excelent dischargeability with hydrosulfite.

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NATIONAL DYES

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T. W. Mullen, Superintendent,
Rosemary Manufacturing Company
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A NEW Direct Dye yielding redder and brighter tones than National Erie Fast Brown G R. Its properties are similar to the latter product, but it has the distinct advantage of better fastness to storing and is not affected by copper.

Possessing good solubility and level dyeing properties, National Erie Fast Brown G 2 R Conc. is recommended for use alone or in combination for the production of tans, khakis and a wide range of browns.

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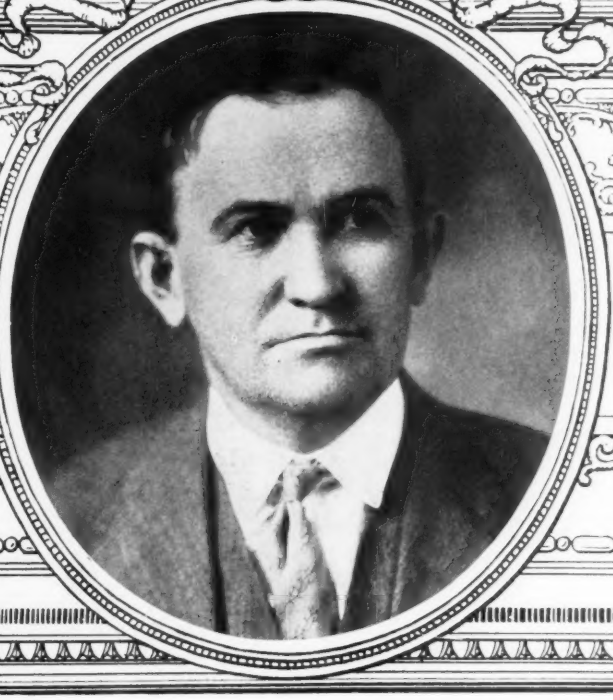
PROVIDENCE CHARLOTTE SAN FRANCISCO
MONTREAL TORONTO

NATIONAL DYES

AMONG COTTON'S READERS



I. B. Covington,

Vice-President and Superintendent,

Wade Manufacturing Company,

Wadesboro, North Carolina.

"I have been a careful reader of COTTON for many years. The splendid articles appearing in it from time to time have been of untold benefit to me in my work."

I B Covington

BLEACHERS!

For bleaching Cotton

We recommend

S O L O Z O N E

We are ready to prove

that it can be done

at no higher cost.

You want: we give:

1] a foolproof process

2] greatest tensile strength

3] a non-yellowing white

4] softness, elasticity.

ASK US!

The
ROESSLER & HASSLACHER CHEMICAL CO.
713 Sixth Ave. New York, N. Y.

AMONG COTTON'S READERS

L. O. Bunton, Superintendent
Ruby Cotton Mills, Inc.
Gastonia, N. C.

"You will find attached remittance for my subscription renewal. In renewing my subscription, I take advantage of the occasion to say that reading COTTON is both a duty and a pleasure. It is a duty to myself and my employers, because it enables me to keep abreast of the latest developments in the textile industry, and I also read it because I enjoy it."

L. O. Bunton

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The
ROESSLER & HASSLACHER CHEMICAL CO.
713 Sixth Ave. New York, N. Y.

We also supply
R&H
ALBONE
(25 Vol. Peroxide)
ALBONE "C"
(100 Vol. Peroxide)
R & H SODIUM PERBORATE

AMONG COTTON'S READERS

W. B. Carden, Night Superintendent,
Goodyear Cotton Company,
St. Hyacinthe, Quebec, Canada.

"I am a subscriber to your textile magazine COTTON, which I heartily endorse as an influential aid to cotton manufacturers."

W. B. Carden

BLEACHERS!

Solozone

is still the cheapest

Peroxide bleaching agent.

But--

where convenience is wanted

and cost is secondary

use "Albone C",

the 100 Volume Peroxide liquid.

Glad to bleach samples

and make demonstrations.

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ROESSLER & HASSLACHER CHEMICAL CO.
709 Sixth Ave. New York, N. Y.

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ALBONE
(25 Vol. Peroxide)
ALBONE "C"
(100 Vol. Peroxide)
R & H SODIUM PERBORATE

AMONG COTTON'S READERS

W. F. Hall, Jr., Plant Manager,
Charlotte Knitting Company,
Charlotte, N. C.

"My honest opinion is, that the highest return per dollar invested in the textile field can be secured by a subscriber to COTTON. The knitting mills, as well as the other branches of the industry, get from the special articles, the discussion department, and especially from the unusual personal service rendered, dividends that cannot be equalled."

W. F. Hall Jr.

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R & H SODIUM PERBORATE

AMONG COTTON'S READERS

P. A. Smith, General Superintendent Manufacturing,
Loray Division,
Manville-Jenckes Company,
Gastonia, North Carolina.

"For years I received various textile magazines as just something I subscribed for. COTTON has progressed far beyond that class as a trade journal, and it now comes to my desk not just as something subscribed for, but as a source of much valuable information that can be well used in solving many problems in operating a textile plant. I read the 'How Other Men Manage' department with much profit, and think COTTON gets better and better."

P. A. Smith

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(25 Vol. Peroxide)
ALBONE "C"
(100 Vol. Peroxide)
R & H SODIUM PERBORATE

AMONG COTTON'S READERS

E. T. Gurry, Manager,
Morrilton Cotton Mills,
Morrilton, Arkansas.

"I can remember, when I was grinding cards, I first started to read COTTON, and I have been a subscriber ever since. I can also remember one time during the War you sent me a copy, and this was received while we were in the lines. Nothing that was sent me during the War gave me any greater pleasure, and I venture to say that no issue of COTTON was ever as carefully read and re-read as this one was."

E. T. Gurry

BLEACHERS!

Re Cotton Bleaching:
Do you know that
S o l o z o n e -
has become the
outstanding bleach?
No! Not alone for Knit Goods
but for Piece Goods as well.
Well able to compete
in cost. Ask us.

The
ROESSLER & HASSLACHER CHEMICAL CO.
713 Sixth Ave. New York, N. Y.

We also supply
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ALBONE
(*25 Vol. Peroxide*)
ALBONE "C"
(*100 Vol. Peroxide*)
R & H SODIUM PERBORATE

AMONG COTTON'S READERS

J. W. Hames, Superintendent,
Exposition Cotton Mills,
Atlanta, Ga.
Vice General Chairman, Textile Operating Executives of Georgia.

"I have been reading COTTON for several years, and have secured quite a bit of valuable information from the practical discussion and other articles therein."

J. W. Hames

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(25 Vol. Peroxide)
ALBONE "C"
(100 Vol. Peroxide)
R & H SODIUM PERBORATE

AMONG COTTON'S READERS

Burton F. Mitchell, Superintendent,
Mercerizing Plant,
American Yarn & Processing Company,
Mount Holly, North Carolina.

"I have been a reader of COTTON for quite a number of years, and consider that I have derived more benefit from its pages than from any other textile publication I receive."

Burton F. Mitchell

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R & H SODIUM PERBORATE

AMONG COTTON'S READERS

Oliver G. Murphy, Superintendent,
Shawmut Mill Division,
West Point Manufacturing Company,
Shawmut, Alabama.

"COTTON has come to my desk for a good many years, and my opinion of it is the highest, for its value to the textile industry is above price."

Oliver G. Murphy

PEROXIDE of HYDROGEN

100 VOLUME

(ALBONE "C")

Produced by Us
Electrolytically

FOR

Every Kind of

BLEACHING

GREATEST ACTIVITY
GREATEST STABILITY

The
ROESSLER & HASSLACHER CHEMICAL CO.
713 Sixth Avenue
New York, N. Y.

Makers of
ALBONE
(25 vol.)
PEROXIDES
PERBORATES
SOLOZONE
(30 vol.)

Among Cotton's Readers

CARL R. HARRIS
Supt. The Erwin Cotton Mills Co.,
Cooleemee, N. C.
President, Southern Textile
Association.

"One must be alert to keep abreast of the progress that is being made in the textile industry, and I know of no better aid in this than COTTON."

Carl R. Harris

PEROXIDE of HYDROGEN

100 VOLUME

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PEROXIDES
PERBORATES
SOLOZONE
(*30 vol.*)

With the Publishers—

Raiding the Closets of Other Minds

Icebergs, so navigators tell us, show only about one-eighth of their surface above the water; the other seven-eighths are submerged.

Neither does the work involved in the preparation of a helpful article or book show fully. The writing that is apparent in the trade paper or the book is often the one-eighth that is above the surface.

Luther Burbank, the plant wizard, told one time in a magazine article of the manuscripts he had for a five volume set of books on the flowers, vines, trees, shrubs and plants that had passed under his hands in half a century. Each flower was described, its origin and family given, its habits and possibilities, the details of his own work with it and what further development seemed possible was suggested.

"The three hundred thousand words written in these pages cannot, of course, give more than a hint," he said, "of the arduous, tireless, exhaustive work performed."

Another example of the work that underlies the preparation of an article or book was ciited by Prof. James Weber Linn, in telling how Ex-Senator Albert Beveridge was writing a new "Life of Lincoln."

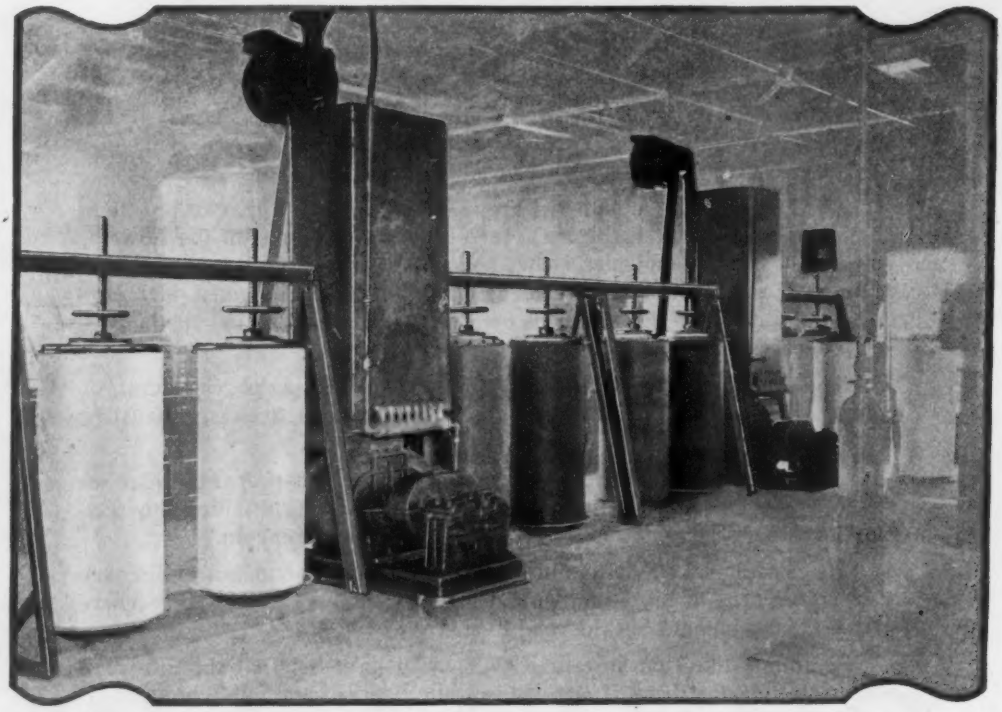
"He examined 6,300 letters in the Trumbull correspondence to discover three references to the Dred Scott decision. Maxim for the day: There are no excursion rates on the road to success."

Testimony like that sustains COTTON in its belief that the mill man who gets the most benefit out of his trade paper is the one who reads it regularly from cover to cover—editorials, articles and advertisements—with the "I-want-to-know" spirit.

"I can remember now the keen zest I had for every sort and kind of information, whether it applied directly to my work or not," wrote Mr. Burbank, "and the reason I remember it so clearly of that slight, active, busy nuisance of a boy and youth I was, is because I have never lost it to this day. A library to me was a gold mine; a book was a trap skilfully baited to entice me in, head over heels. . . . I was not a book worm or a prodigy; I was much more certainly set down by my elders as inquisitive and sometimes a bother, but I did want to know and I was unscrupulous in stealing something from any store that lay open to me, and tireless—though maybe tiresome—in my anxiety to get at the plum preserves in the closets of other minds."

Through the columns of COTTON many men open the closets of their minds; expose above the surface that visible one-eighth of the work involved in searching, experimenting, combining ideas, separating other ideas, trying out possible solutions for some method or problem, and finally preparing a descriptive account for publication. Like Burbank, they do not hesitate to adapt the ideas and suggestions of the other fellow to the problem in hand. Also like Burbank, they return in larger measure from the fullness of their findings that all who will may be benefitted.

Are Your Drying Methods Eating Away Your Profits?



One type of our monel metal beams which in no way affects either direct or neutral acid dyeing colors. Our package tubes are also of monel metal.

Many textile men have found that the old methods of drying packages and beams are eating away their profits because of the time and labor consumed in handling the yarn.

Here is the way they have defeated the situation.

They found that the cost of installation, operation, and maintenance of our Combination Drying Machine is lower than any other package and beam drying equipment on the market—that it can be adapted to suit any need.

Then they invested in the Combination Drying Machine.

That practically tells the story. The machine is arranged so as to dry yarn on beams and packages without removing the yarn. The yarn is taken direct from the dyeing machine to the drying machine, which serves as extractor and dryer. It is comparatively fool-proof and requires no labor whatever except loading and unloading the yarn—about two hours out of every twenty-four of one man's time.

Let this Combination Drying Machine save for you. Write now.

GASTON COUNTY DYEING MACHINE CO.

STANLEY, N. C.

COMBINATION
Beam and Package Dyeing Machines

INVENTORS AND MAKERS OF

Beams
and machines for
Beam Drying
Beam Winding
Beam Dyeing
Package Drying
Package Dyeing
and Bleaching

With The Publishers

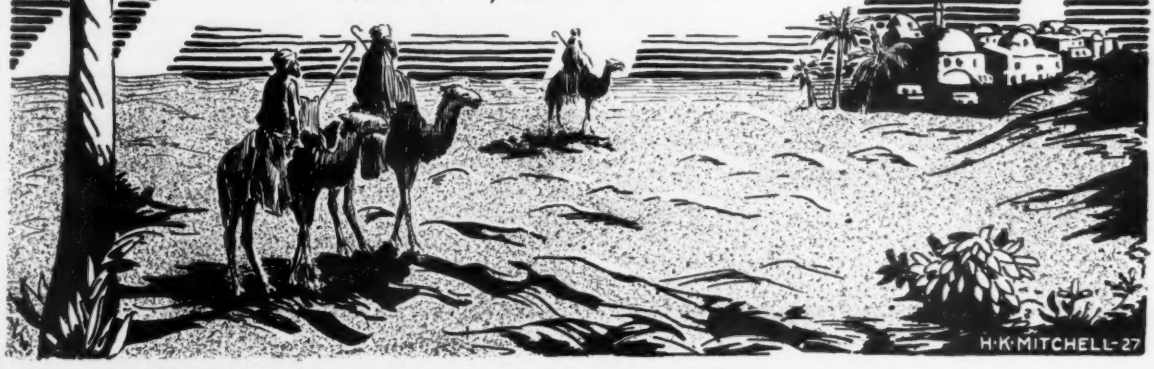
You who dream, afar envisage
Patterns noble in design,
Light with torch of inspiration
Fires that glow, flame and refine,
Beckon, ever onward beckon
Greater heights ahead to win
Countless followers on life's pathway,
Countless throngs who toil and spin.

And to you who daily labor
Through summer's heat and winter's cold
Entwining into earth's dark fabric
Threads of pure refined gold,
We extend to you co-workers,
Greetings, heartfelt and sincere,
Wishing each a Merry Christmas
And a Happy Prosperous Year

With the passing of time's shuttle,
To and fro, across and back,
Weaving seconds, minutes, hours—
Seemingly an endless track—
Threads have broken and been mended,
Knotty problems day by day,
Have been met and have been mastered
As seemed best in each his way.

Carded fibers changed by magic
Of machinery, brawn and skill,
Have been fashioned into beauty;
Texture woven to your will;
Products needful for a nation,
Cunningly, with perfect art,
Knitted fittingly together,
Forming one exquisite part.

You have been to men a blessing,
Made the world a better place,
Fired and stirred our holy passion
To be conquerors in the race.
So we wish for each co-worker,
Friends in every land and clime,
All the gladness of the season
And a Merry Christmas time.



The Name That Stands for Standard

"DIASTAFOR"

The Scientific Desizing Agent

SEASONED textile men who "know processes" pick Diastafor because of its proven efficiency.

Whether used for sizing, stripping or finishing it serves faithfully and uniformly, giving every required result, actually benefiting the fibre by giving it strength and fullness of feel. Diastafor has established new desizing records with its liquefying action on starch in cotton, rayon, and mixed goods.

It is through these known qualities, based on the actual performance of twenty years, that Diastafor has come to be recognized everywhere as standard—and as such, preferred by the majority of textile men throughout the country.

To use Diastafor is to get the utmost in service and economy.

Shipments can be made promptly and as you need them. We have a warehouse near you. Write for detailed information today.

THE FLEISCHMAN COMPANY

Diastafor Department

695 Washington St., New York City

With the Publishers—

Systematic Highwaymen

The value of keeping files, not only of trade papers, but of clippings, for reference, has been constantly advocated by COTTON. However, there apparently are files of clippings beyond our innocent conception. How criminals use them was told in the Chicago Herald and Examiner:

"The perils of photography were oddly illustrated the other day, when hold-up men attacked a Chicago man and his wife and demanded her jewelry.

" 'We know she has it,' they said, 'because we saw it on her in a picture published in Kansas City six months ago.'

"The assertion was alarming. It has long been considered dangerous to wear expensive jewelry in cafes, because men and women have in many such cases been observed, followed and robbed at leisure.

"Are our modern highwaymen so up with the times that they keep a clipping bureau?"

Those robbers read the papers with their minds in gear with their work—a plan recommended to readers of COTTON.

"Clipping is so personal," said James H. Collins, in Printer's Ink, "that the best printed information you find, bearing on your interests, is usually what you snip out of the publications yourself. It is so personal that you yourself will seldom do it alike on different days.

"One morning, the publication dealing with your field will be devoid of pertinent information. Next morning any discarded paper you pick up in the smoking car yields a half dozen items bearing on the problem you must tackle when you reach the office.

"The difference is in you, naturally. One day your mind is alert, keyed to a given subject, and another day it is out of gear. Herbert Spencer expressed this when he said that if his mind was concentrated on a given subject, the next man he met in the street would tell him something important about it. On this account, he did far less reading than he was given credit for, working on this principle of the alert mind attracting pertinent facts * * *"

Here Mr. Collins has given us a good argument for preserving a file of COTTON—even if the articles that appeal to the reader are clipped at the first reading. Reading a trade paper, like the clipping is "so personal that you will seldom do it alike on different days."

The first time you read it your mind may be "out of gear" with certain articles and certain advertisements. The next time you pick up COTTON your ideas mesh with the ideas in the same articles and advertisements—and you are off with another profitable plan.

Perhaps the better plan is to have the file copies suitably indexed and bound. In such a case the indexing should be done on cards and by salient subjects, making it an easy matter to segregate in your file all that has been published on any special problem you may have in mind. In this manner you are able to gear up your mind and your subject material at will.

Light and Small but POWERFUL

U. S. Heavy Duty ¼" Drill

1000 R.P.M. under Full Load

$44.00

THE UNITED STATES ELECTRICAL TOOL COMPANY

Oldest Builders of Electrical Drills and Grinders in the World

2474 West Sixth Street Cincinnati, Ohio, U.S.A.

Portable Electric Drills
Grinders–Polishers

Export Sales Representatives—WESTINGHOUSE ELECTRIC INTERNATIONAL CO.—150 Broadway, New York City

With the Publishers—

When Shop Talk is An Asset

The pages of COTTON are filled with "shop talk".

We find them interesting; men in the textile industry tell us they are interesting; and we have believed that outsiders were not merely being polite when they told us they found them interesting.

In fact, we have always found shop talk stimulating.

But we began to have our doubts when professional critics of American life set out to decry the prevalance of shop talk. It was the cause of the "tired business man", it was making conversation "a lost art"—but listen to one of them:

"Multitudes are in a plight much like that of a traveling man whom a friend of mine encountered during a railway journey from New York to Chicago.

"As my friend tells the story, 'I had gone to the smoking compartment to enjoy a cigar. There was only one other person in the compartment, a middle-aged man, and not unnaturally, I fell into conversation with him.

" 'He was willing enough to talk, yet singularly unresponsive. No matter what subject I broached he answered only monosyllables. He did not seem to have any ideas or to have formed an opinion about anything. Finally I gave up in despair and lapsed into an uncomfortable silence.

" 'Then it was that he turned his gaze upon me and with a look the pathos of which I cannot describe, offered the suggestion:

" 'Try me with leather.' "

Later along came one of the "quality" magazines with an article by Albert J. Nock, declaring that conversation is a lost art in America because Americans insist upon talking shop. Keith Preston, book editor of the Chicago Daily News, disagreed with that point of view.

"The most interesting conversations we have are with men who talk shop," he said, "for a man's own business is something he knows thoroughly and on which he is likely to have ideas and opinions that are new and novel.

"The trouble with conversation in America is that so many people don't talk shop but do talk automobiles, golf and prohibition, about none of which is it possible to say anything either new or interesting."

At any rate the circulation of COTTON seems to attest that men in the textile industry find our shop talk interesting. Not only do they read it, but many of them take part in it. Some of them clip those portions of COTTON devoted to discussion or shop talk and bind or otherwise file them for preservation. Others write to us to ask why we do not reprint certain portions in book form.

But when we sift the situation down and examine the results we find that practically all of COTTON is shop talk. Not alone the discussion sections, but all the articles. Even the advertising pages are filled with shop talk by those makers of equipment and supplies. A separation would be most difficult and probably unsatisfactory, as each reader would have a different viewpoint on what should be included.

So we make COTTON "shop talk" from cover to cover. If the readers wish to segregate portions of it; that is their pleasure. We feel that our job is to present every phase as fully and completely as possible.

"Send us Four Extractors the Same as Last Order"

One of the most successful woolen mills in the U. S. A. recently ordered additional machines to take care of enlarged production in exactly these words.

The confidence back of this order is based upon the findings of their plant engineer and his experience with Tolhurst and other extractors over a period of years.

Whether the product be wool, cotton, silk or rayon, there is a size and type Tolhurst ideally suited to the need and the layout of the mill.

Write for catalog, or if you prefer, the consulting service of a Tolhurst Engineer may be arranged on request.

TOLHURST
REG. U.S. PAT. OFF.
CENTRIFUGAL
EXTRACTORS

D. O. TOLHURST MACHINE WORKS ESTABLISHED 1852. TROY, N.Y.

New York Office: 183 Madison Ave.

DESIGNED AND BUILT BY SPECIALISTS

Southern Representative: FRED H. WHITE, Independence Bldg., Charlotte, N. C.

San Francisco Representative: B. M. PILHASHY, Merchants Exchange Bldg., San Francisco, Cal.

Western Representative: WILLIAM T. POWERS, 8 South Dearborn St., Chicago, Ill.

Canadian Representative: W. J. WESTAWAY CO., Westaway Bldg., Hamilton, Ont. 275 Craig West, Montreal, P. Q.

With the Publishers—

He Never Was Humiliated Again

This is the day of the "confession" type of story and article, and a trade paper correspondent recently ran into a business man who furnished him with the material for an article on:

"How I Broke the Too-Busy-to-Read Habit."

This man wasn't in the textile industry but the application is just as good in this field.

There isn't anything unusual in the way it came about; it's an old story in most lines of business. This man went with a business problem to an older and more successful man in the same field. He got the solution quickly but when the older man gently remarked that the subject had been thoroughly discussed in a recent issue of the leading trade paper in that field, the younger was stirred to a half-apology:

"I don't have much time to read."

The older man smiled as he reached into a desk drawer and pulled out a clipping.

"Well, you'll have time to read this on your way back."

The younger man did, as he told the trade paper correspondent. And before he returned the clipping he had several carbon copies made, one of which he let the writer take. The clipping was from the Little Schoolmaster's Classroom, in Printers Ink, of August 10, 1922:

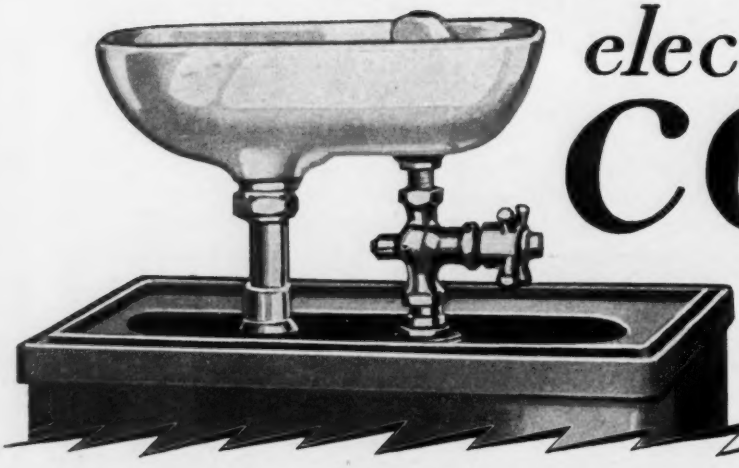
"Once in a while somebody is encountered who says he is too busy to read.

"When a fellow makes the humiliating confession that he hasn't time to read, the Schoolmaster is always reminded of an incident which he once heard concerning President Roosevelt. It seems that a friend, knowing of the President's interest in Irish literature, sent him a book on that subject. The friend called on the President two or three days later. He intended to say nothing about the book, as he naturally assumed that the Colonel would not have had time to look at it. It happened at a time when Roosevelt was unusually busy. He was entertaining an Oriental delegation. He was preparing an important message to Congress. Despite this pressure of affairs, he had found time to go horseback riding, to keep an engagement with his tennis cabinet, to take a boxing lesson, to play with his children **and to read that book.** His reading was more than skimming, too. No sooner had his friend arrived than he plunged into an intimate discussion of the book. . . .

"Having time is not a matter of busy-ness. It is a matter of organization. The man who carefully organizes his time will have a sufficient margin left for reading. Who cannot give fifteen minutes a day to reading? If spare time usually wasted, were devoted to this purpose, most persons would be surprised to find that they could easily spend two or three hours a day in reading."

And that's what this younger business man confessed to the trade paper correspondent. That he'd tried out the plan of devoting fifteen minutes a day and then found so many odd fifteen minutes that he had plenty of time to read his trade paper regularly—and the advertisements, too.

Think over your list of acquaintances with this story in mind. It will develop one fact for you in concrete form. The busier the man and the more important his position, the less will you hear him complain about a lack of time to accomplish something he really wants to do. It is the ability of these men to organize their time that has placed them in the front rank of executives. You'll find one on the page "Among Cotton's Readers" each month.



electrically cool drinking water

Automatic---Instantaneous---Continuous

BILT-RITE water cooling units provide positive temperature control and actually save money in comparison with the cost of using ice.

Twenty-four hours a day, winter and summer, your drinking water will be 40, 45 or 50 degrees, as you want it—never too warm nor too cold. Your welfare director knows the value of this. Fountains located for the greatest convenience of employes. One or more fountains operated by the same cooling unit. No plant too large for Bilt-Rite flexibility of installation.

Bilt-Rite

Installations made after survey by our Engineers in cooperation with local Frigidaire or Kelvinator Distributor. Inspection and service, thereafter, by dependable local organization.

Consider the cost, inconvenience and uncertainty of icing, and the dangers of uncontrolled drinking water temperature. Let us show you how to save money, safeguard employes' health and improve the appearance and convenience of your office and factory.

Russ BILT-RITE Products Cleveland

State class of manufacture and number of employes to be served. Our representative will make suggestions without any obligations on your part.

Introductory booklet and references from large industrial users on request.

The Russ Manufacturing Company
5706 Walworth Avenue,
Cleveland, Ohio

With the Publishers—

When Business Men Are Daring.

"The American business man is a great figure because he is daring."

James Weber Linn, professor of English at the University of Chicago, said this because he disliked the statement in a recent book about the American business man which said: "No trail-breaking or pioneering for him. The unexplored spaces of the world trouble him not."

Professor Linn then goes on to point out a trait in the American business man, a trait that has made it possible for this country to develop such wonderful trade papers with their marvelous systems for gathering, weighing and passing on to the industry valuable information.

"Like any other intelligent man, he first makes as sure as possible that he is right. But then, unlike so many of us not in business, he goes ahead, takes the chance that remains.

"The Frenchman does in art, but not in business; therefore in art the French have become great; in business they are not to be compared with us. The German does in philosophy, but not in business, therefore as said before.

"Thirty years ago Oscar Lowell Triggs said that the greatness of John D. Rockefeller in his day was a phenomenon to be compared with the greatness of Shakespeare in his day. He meant that Rockefeller, like Shakespeare, was greatly daring.

"The American business man today dares to include other interests than those strictly of business. He dares to read philosophy; he dares to paint, and collect first editions; he dares to give away his money; he dares to serve his community in public office; he dares to take time for recreation.

"And in his own field he dares magnificently."

As Professor Linn says, "He first makes as **sure as possible** that he is right." That is a trait that calls for getting together all the information that bears upon a situation and weighing all the known factors.

COTTON has repeatedly insisted that its articles are not cure-alls for the ailments of textile mills. But these articles do tend to give mill men all the information available upon a certain subject so that superintendents and others may be as right as possible before they go ahead.

No trail-breaking or pioneering for the American business man? What else do the advertisers in COTTON do but that? They experiment and try out all equipment and supplies and prove their value before they offer them to the textile mills.

We might cite specific instances in each case, but do not believe this is necessary.

Section of the Appalachian Mills Co., Knoxville, Tenn., finished in Sherwin-Williams Save-Lite.

More light--better light *with this remarkable light-diffusing wall finish*

Men must see to work. Dim, gloomy light is the direct cause in a large share of accidents and spoilage.

On the other hand, a dazzling, glaring light produces a nervous strain that also lowers efficiency.

S-W Save-Lite (Eg-Shell) gives *more light of the right kind.* Its egg-shell finish diffuses a soft, luminous glow that makes good work easy to do.

Tired eyes result in accidents and various ailments that take a heavy toll of workers. Naturally labor turn-over is increased. Efficiency decreases in proportion. Out-put is lowered. A costly penalty for a poor light, and an unnecessary one!

With the clear visibility attained with S-W Save-Lite (Eg-Shell) accidents and mistakes are greatly reduced. The quality of the output improves. Production volume increases.

S-W Save-Lite (Gloss) is a mill white that flows evenly and covers more surface than most similar products. It can be sprayed satisfactorily. Save-Lite stays white, does not yellow, and retains its smooth, washable surface.

Let a Sherwin-Williams representative explain more fully how S-W Save-Lite increases production without raising manufacturing costs.

Special line for mill villages

The Mill Village line for exteriors and interiors fills the demands made upon us by certain manufacturers. These men know the value of improving living, as well as working conditions.

Greater covering power and super-durability make these paints more economical. Beautiful color harmonies and uniform tones insure pleasing results.

THE SHERWIN-WILLIAMS CO.

CLEVELAND, OHIO

Note—We have just opened an office in Spartanburg, South Carolina (224 Montgomery Building), for the convenience of mill owners and operators in this section.

COVER THE EARTH

Trade-mark Registered

SHERWIN-WILLIAMS

SAVE-LITE ENAMEL

With the Publishers--

A Great Builder Passes

By W. R. C. Smith.

ON THE morning of April 2nd, 1928, Louis Lincoln Arnold, for seventeen years Editor of COTTON, wrote finis on Life's Manuscript and laid down his pen, forever.

He was peculiarly fitted for the vocation to which he devoted the major portion of his life, that of translating and interpreting the transitions, methods, and processes effective in his generation in the textile industry. Because Louis Arnold loved his work he found it of absorbing interest and his life work became almost an obsession with him. It was patent to a great many of his friends that he considered the editorship he occupied a much greater thing than could be measured by one man's life span, or one man's activity alone, and he often emphasized in personal statements and in his editorials that:

"An opportunity to serve in the development of the great textile industry of America; to aid in making more efficient the processes of textile manufacture and to contribute to the economic development of this great industry, is a worthy and worthwhile ambition for any man."

Louis Lincoln Arnold
March 22, 1872—April 2, 1928.

Simple, plain and direct in all his human relationships with his associates and in his social contacts, Louis Arnold lived his life like the pages of an open book. He meant what he said and said what he meant. He knew how to keep a confidence; when to speak and when to keep silent, and these traits of character unrolling through the years, brought him a legion of friends, not one of whom he ever lost.

Long before his end came he, himself, planned that the work he had instituted should go on in even a broader measure, if possible, than during his lifetime. It is no secret to scores of his friends that one of his most jealous privileges was the training of his successors, one of whom especially was associated with him for nine years.

Mr. Arnold was a great builder in the industry he loved. Thousands of textile men have profited by his wise philosophy, his common sense, his depictions of the needs of the industry, his interpretation of the economic trends in textile manufacturing. This was proven not only by the great following of the readers of the publication he edited, but by the pilgrimage to his desk of many of the great textile manufacturers and others who sought, in confidence, his advice.

His associates could pay him no greater tribute than the expression of one of them before the mound of flowers which covered his last resting place:

"We can only believe with him what he uttered just before he died and that was, 'I hope and believe I have accomplished, according to my strength, the most important things expected of me and those things which I most desired to accomplish.'"

How true this was only the men who stood shoulder to shoulder with him through the years can testify.

The fact that he did not build with brick and stone does not any the less constitute him a great builder. He wrought with the minds and hearts of men, attuning them to a greater spirit of co-operation and a happier belief in the worthiness of their occupations and a prouder knowledge of their individual value to society.

WHICH DO YOUR ENGINEERS PREFER?

A Rich Oil-Enamel Lustre or a Satiny Eg-Shel Sheen

Save-Lite Industrial Whites provide both, superlatively.

This is in keeping with Sherwin-Williams policy for over 60 years—The Correct Finish for Every Service and Surface Requirement.

In the gloss—Save-Lite is entirely free of what may be termed a cheap, shiny gloss. There is no harsh glare or perishable glitter to break down in service.

The full, rich oil-enamel lustre and tight film obtained in Save-Lite has been made possible only through the most careful balance in the formula and the thorough treatment of the liquids which support the pigment.

In the Eg-Shel—Save-Lite provides the same dense-covering, luminous white, but the gloss has been reduced to approximate the light-diffusing semi-matte texture of a white hen's-egg.

The drying time is uniform, and the material levels well either under the brush or in spray application.

Lighting engineers have generously collaborated with our own engineering staff in developing both Save-Lite Gloss and its companion product, Save-Lite Eg-Shel. The results are conclusive. They are thoroughly dependable and satisfactory in every way. We take pride in recommending Save-Lite for your plants.

Mill Village Paints

Sherwin-Williams' success for over sixty years has been based upon Prepared Paints designed for certain uses and various types of surfaces. Our facilities enable us to prepare such products so that they give better satisfaction for the user than anything he can obtain elsewhere or produce himself. Our Mill Village Paints will save you money because they are made right for the service you require.

THE SHERWIN-WILLIAMS CO.
CLEVELAND, OHIO

NOTE: Our office at Spartanburg, S. C. (224 Montgomery Building) is maintained for the convenience of mill owners and operators in that section.

COVER THE EARTH
Trade-mark Registered

SHERWIN-WILLIAMS
SAVE-LITE ENAMEL

With the Publishers—

Reading Cotton In 2028

Clippings about the flight over the North Pole were enclosed in a lead box and placed in the cornerstone of a church which was laid in Chicago to be preserved for future generations. There was considerable speculation as to what would happen in the time before the box would be opened and as to how the researchers would marvel at the startling changes—perhaps a more habitable land in the northern regions would have been discovered.

We would like to have a copy of COTTON placed in the cornerstone of some textile mill building, if it were possible in some way for us to be present when the box was opened, say a hundred years from now, and compare the changes in methods of manufacturing of the two periods. Those changes will be worth nothing, because those now going on under our very eyes are rapid.

All industrial operation is affected by changes in merchandising methods and there is nothing which is changing so rapidly as merchandising. As G. A. Nichols pointed out in Printers' Ink:

"Things happen so fast in merchandising these days that tremendous situations often spring, full grown, into the very midst of affairs, without having given any premonitory warning."

Because changes are so sudden, a trade paper like COTTON becomes more important to the men in a given field. Every article telling about the operations in a particular mill may be of value later to another mill which finds itself planning changes. For that reason a file of COTTON should be kept. The mill superintendent today may read something which he will use a little later—but sooner than he had expected to.

Equally striking at this particular time are the movements and trends in mill practice. It has been only recently that many major changes in process have been developed, and even now there are signs of changes pointing to shortened process, increased efficiency and improved manufacturing methods. Such of these as possess the prospect of permanence and value, the editors endeavor faithfully to record in COTTON. Progress means change, and by reflecting the trends and transitions in manufacturing opinion and practice, COTTON becomes the chronicler of progress.

And if, as we fancifully remarked, a copy of COTTON were to be placed in the cornerstone of a textile mill building, we wouldn't want the advertising pages left out. Perhaps a hundred years from now some mill superintendent would see them and realize that manufacturers of equipment and supplies in 1928 were more than keeping pace with the standards of mill operation as shown by the editorial pages.

Could anything more representative of the textile industry than a copy of COTTON be preserved for future generations?

The Winnsboro Mills, Winnsboro, South Carolina, is a splendid example of good lighting results obtained with the correct finish on the walls.

There is a *difference* in Industrial White Wall Finishes

Today the successful manufacturer designs his product for very specific purposes. Each piece of cotton cloth is spun and woven to be used a certain way. Perhaps it is broadcloth, sheeting or material for men's collars. There are as many types as there are requirements.

How many types of Industrial White Paints could likewise be made? For example, your engineer has places where he prefers a full Gloss White and other requirements where an Eg-Shel lustre is necessary. He will have still further uses for a straight Flat White.

Then again, many of our customers have rooms in their plants where a standard Industrial White would soon turn black because of fumes arising from manufacturing processes. Your wall finish must be adapted to the surroundings.

SAVE-LITE is a complete line of Industrial White Wall Finishes made by Sherwin-Williams, designed by our engineering staff to provide the correct White Finish for any requirement.

The Plant Standardization service, of which Sherwin-Williams is the originator, brings expert paint engineers to your plant. These men are trained to know how paint will effect the economies you desire and speed up production. They work hand in hand with your engineers and with the lighting engineers you employ. This is our assurance that you will be a satisfied user of whatever Sherwin-Williams products you may need from time to time.

THE SHERWIN-WILLIAMS CO.

CLEVELAND, OHIO

Note: Our office at Spartanburg, S. C. (224 Montgomery Building) is maintained for the convenience of mill owners and operators in that section.

SHERWIN-WILLIAMS

SAVE-LITE ENAMEL

With the Publishers—

Your Statue While You Wait

"This statue is an excellent likeness of Mr. So-and-So, isn't it? Who was the sculptor?"

"Oh, it was turned out on a -------- machine."

That's not so fanciful. A mechanical engineer, in Chicago, William F. Engelmann, has invented a machine that carves portrait heads out of plaster. In truthfulness, human likeness and perfect proportion, its work is said to exceed any sculpture done by the human hand. Only the finishing touches—the smoothing—are done by the sculptor.

It does its work quickly; only a few minutes of time are required from the sitter and two days work by an operator for the finished product. As the result of a single sitting two portrait busts could be made—one four or five times life size and the other so small that it could be worn on a ring or pin. The likeness in each would be equally accurate.

A motion picture camera rotating at a given speed, at a given distance around the sitter, takes silhouette pictures of the sitter from 400 different angles. The developed film is projected, a picture at a time on a ground glass screen at the control of the operator. A stylus suspended before the screen allows him to trace the outline of each plane as it is thrown on the screen. The stylus is attached to a pantograph, which transmits its movements to a milling cutter revolving at high speed. A block of plaster of paris or other material is fastened on a revolving disk in proximity to the cutter. When the movement of the stylus begins to trace the outline of the head shown on the glass screen, the cutter traces the same path, shaving away the block of material until it assumes the shape of the photograph. When one plane has been completely outlined, the succeeding picture is thrown on the screen. This action also moves the block of plaster a distance on its axis equal to the distance between the angle of the two successive photographs. Then the new plane is traced and shaved—until all 400 planes are cut away and the result is a mathematically accurate reproduction of the object that was photographed. Smoothing is left to the sculptor's judgment.

All of which goes to show that changes are bound to come in any field. Maybe home-sculpturing machines will be perfected and the baby's progress recorded in plaster or marble just as it has been by the kodak and more recently by the amateur movie camera.

Did you notice how many different angles there were to the portrait? Often there are as many to the portrait of a successful mill man or of a successfully operated mill. That's where COTTON'S editorial machine functions—in trying to get an accurate picture of each of these angles, even if the reader sees only the finished product.

By presenting the opinions of many practical men, on mill problems of common interest, COTTON acts in the capacity of providing the reader with as many angles as possible. Aiding materially in this work are the advertisements of equipment and supplies, presenting still further angles of modern developments.

"My Most Useful Maintenance Tool"

—as a grinder

—as a post drill

—as a bench drill

U. S. ¼-inch Drill
1000 R.P.M. Under Load

$33

This compact, powerful little drill weighs but 5¾ pounds, works at *full rated capacity under load,* and operates on 110 or 220 volts D. C. or A. C. (60 cycles or less). SKF Ball Bearings throughout. Chrome nickel steel gears, hardened, running in grease. Silk-wound armature. Three-jaw screw-back chuck, etc., etc. Get all the facts before you buy.

Ask Your Jobber or Write Us

The UNITED STATES ELECTRICAL TOOL COMPANY

2474 W. SIXTH ST. CINCINNATI, U.S.A.

THE STANDARD OF QUALITY SINCE 1897

Oldest Builders of Electric Drills and Grinders in the World.

Export Sales Representatives. Westinghouse Electric International Co. 150 Broadway, New York City

With the Publishers—

Whetting the Idea Faculties

"Now you can slice the bread—better sharpen the knife a bit," remarked the wife of a cotton mill superintendent who has been pressed into kitchen service for the sandwiches when they had been surprised by company one night. "There's the sharpener to your left," she added.

The mill man turned and found right handily one of those devices by which the knife is sharpened quickly, merely by drawing the blade a few times between rotating abrasive wheels. This device was fastened to the kitchen cabinet where it was always ready for use.

"How different from my mother's kitchen," he remarked. "She always had to hunt up a crock and whet the knife when she wanted to sharpen it. Once in a blue moon Dad would grind them—but they didn't keep in shape like this one."

His wife laughed. "The housekeeper of today **keeps** things up. The idea is to make things run smoothly. If the knife is sharp the woman is likely to be less dull; she doesn't wear herself out with irritations—that's the whole principle."

Good operating ideas are the staff of life for textile mills.

Files of COTTON are excellent things for the mill superintendent always to have handy. The articles in them will whet his faculty of adaptation, as it has been called. For textile men do have periods when they become dull. And often, when they need keenness most to solve some problem that is costing them money. As one writer has described these periods of "running dry":

> "Like the overtrained athlete he goes stale. Try as he may, it seems impossible to lift his thoughts out of the utterly commonplace. By sheer force of will he may plod through the tasks of the day, but the sum total of achievement seems only added weariness. His mind refuses to think except in ruts, and even there it acts under protest. There is no need to particularize. It is familiar enough to any man who has ever tackled a proposition requiring sustained mental effort."

When he picks up a copy of COTTON he may not find the exact solution of his problem. But he is likely to find somebody approaching the familiar subject from different angles, or another problem from a different angle. Such articles are a tonic to his jaded imagination. Subconsciously, he begins to test their methods against his own experiences. Here and there he finds a detail that might be adapted to fit his problem. He is no longer thinking in a groove.

An instance of this occurred recently. In the April issue was described the modern hosiery stock room of an up-to-date North Carolina mill. Then along came a letter from a foreign subscriber, whose ideas had been whetted by what this man was doing. He said he realized his own practice in storing hosiery involved much waste and he wanted to get further details from the North Carolinian as to details. This information was secured, and forwarded to him, and will be published soon.

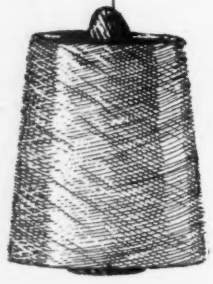
The advertisers of equipment and supplies also help the mill man to uncover better ways of doing things. Reading COTTON is the easiest way for him to secure contact with other minds and get inspiration from outside sources.

A HARDY, strong rayon, yet very soft in texture—*Industrial Premier*—a yarn that is enabling underwear manufacturers to make garments which stand up under hard use and ordinary commercial laundrying.

A rayon that manufacturers find most satisfactory in giving those essential qualities—appearance, comfort and durability—to underwear for men.

Industrial Premier—have you tried it?

INDUSTRIAL RAYON CORPORATION
General Offices and Plant: Cleveland, Ohio
SALES OFFICES IN PRINCIPAL TEXTILE CENTERS



INDUSTRIAL *Premier Rayon*

PREMIER INDUSTRIAL RAYON

With the Publishers—

Mapping the Volcanoes in Cotton

IF YOU were to take a pencil and make a rough mark on the paper on which COTTON is printed and then place it under a very high-powered microscope you would be surprised. You would see something that looks like one of those pictures of a great volcano on the moon.

This is an era of pencils. Never have there been so many different kinds of pencils and so many—beautiful and costly mechanical ones and plain, cheap wooden ones. Even at a quarter you can buy mechanical ones that imitate the leaders in looks and have some of their mechanical features. Few persons, even the school children, are without at least one of the handy, modern pencils.

And yet everybody does not know how to get the most out of a pencil —to make it a custodian of valuable ideas.

We have been a long time with the assistance of pencils. Just how old they are is not easily learned. But pencils are referred to in a book published in 1565.

We even miscall them "lead" pencils. If they were really made of lead they would not write. A "lead" pencil is actually made of a vast number of tiny crystals of carbon. This form of carbon is called graphite from the Greek word for writing. These crystals are small and of such a shape that they can easily be rubbed away from each other and onto the paper.

You can get the most benefit out of one of these modern pencils by using it to mark articles and advertisements in COTTON that you are likely to want to use later.

"While learning to drive an automobile we worry and fuss and make many false moves," says Dr. Stanley Rinehart. "Greater ease comes with practice and finally we become expert, we can drive just as we walk—without thinking about it. When the car skids we right it. Then perhaps someone asks, 'How did you do that?' We cannot tell how we did it. The various complicated things we did to stop the skidding had been learned gradually, had become automatic, and we cannot give them in sequence without much more thought than was required to perform the act.

"Children learning to speak or walk and later to play games, or older persons learning a complicated task, find difficulty at first. Later, habit shortens the route between the brain centers. We do an accustomed thing automatically without wasting so much nervous energy on it. In other words, habit makes movements exact, or, as the psychologists say, it 'sets' them and lessens fatigue."

So it is with reading COTTON. The editors endeavor to produce in the reading pages a character of reading information that will be of definite and specific application in mill operation. No one reads all of it—nor is this expected. But each issue is designed to carry something of direct or indirect value to every type of reader. The regular habit of selecting those features in each issue of COTTON for careful study and, perhaps, more detailed analysis and application later, is enthusiastically recommended to us by many busy readers who consider the magazine an adjunct to their business.

Fuses!

the protector against electricity's damaging surges, have a vital relation to power and production costs.

Those bearing the Underwriters' Inspection label are a guarantee that they will protect according to established standards, but this guarantee does not run to the internal performance of fuses.

TIME LIMIT is an important function in fuses. The standard prescribes a definite time for a fuse to hold on a surge, or overload, before blowing.

TIME LIMIT is needed for the dissipation of the surge or temporary overload. When a fuse blows within only a fraction of the time limit, it blows prematurely, and causes unnecessary annoyance, costly interruptions to production and a waste of time and money to renew fuses.

TRICO Renewable Fuses, because of their "Powder-Packed" elements and copper to copper contacts, run almost the full course of the time limit, hence carry the surges and overloads to their limit, giving the electrical current a chance to right itself in the line. Doing so, saves unnecessary shut downs which directly reflects favorably on your production costs.

WATT LOSS is another factor in saving. It is something the Underwriters' Laboratories does not concern itself about when testing fuses, but it is important to the user, and makes a favorable impression on power costs.

The WATT LOSS saving is possible in TRICO Renewable Fuses because of the "Powder-Packed" element and copper to copper contacts.

Folder 206-B tells in detail about these features.

Send for it TODAY

TRICO FUSE MFG. CO. 1003 McKinley Ave. MILWAUKEE, WIS.

The FIRST and ONLY renewable fuse to supply a "Powder-Packed" Renewal Element, for the price of a lonely bare link, together with added efficiency and protection—at no greater cost.

TRICO REG U S PAT OFF. RENEWABLE FUSES

They're "POWDER-PACKED"

They're fully approved by Underwriters' Laboratories and were the FIRST renewable fuses to successfully pass Underwriters' test requirements in all standard sizes and voltages. (June 3rd, 1919.)

With the Publishers

Memory Nudgers

DID YOU ever visit a mill where, every time you turned around, you saw some plan in use that made you feel that the superintendent was nothing short of a genius? Maybe he had a system of "memory nudgers" all his own.

This term is used a good deal in building, to indicate lights placed on about the sixth riser of a stairway to indicate that you have left the cellar or garage lights on. "Memory nudgers" can also be applied with fitness to articles and advertisements in your business paper if they are clipped and filed or marked for future reference.

A carefully worked out system of filing clippings from COTTON, or a system of indexing the material, is an excellent plan and well worth the investment. But even if you don't do that and will only save a complete file of your magazines, you will be surprised how valuable a re-reading of the old numbers will be. Sit down with some back copies with the purpose of making a "journey of discovery."

You will find published two or three years ago solutions of problems that you did not have at that time but which have been developed since. You don't remember that they were in COTTON because probably at the time you gave it the first reading you had more pressing concerns.

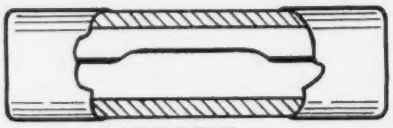
We recently encountered a mill man who needs one of these "memory nudgers," and the incident illustrates the value of some system of this kind. On an editorial jaunt we found him tremendously interested in the idea of conditioning his filling yarn and conveying it to the weave room automatically. He told us that he understood that the B—— Mills, several hundred miles away, had just what he was figuring on in this connection—and that as soon as he could leave for a day or so, he was going over to see it.

We smiled! A complete and elaborate description of the filling conveyor and conditioner at the B—— Mills was published on page 1 of the November, 1927, issue of COTTON; not having been described elsewhere. It attracted about as much attention at the time as any article of the character which COTTON has published. But this man missed it. At that particular time, we took pains to find out, there was another proposition uppermost in his mind, so that he didn't pay especial attention to the article about this one.

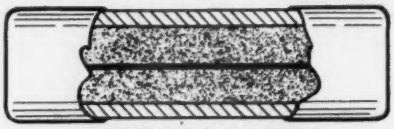
But now, almost two years later, he was tremendously interested.

So it is with all of us. There is a distinct similarity in the problems of different mills, but they come to different mills at different times. And you never know when information on some particular subject is going to come in handy.

Study This Comparison



BARE LINK



POWDER-PACKED

THEN DECIDE

WHICH!

FUSE TO USE!

Bare links in Renewable Fuses are unsupported inside of casing. The excessive heating of the link, due to overloads and surges, reduces it to a plastic stage. Then the link having no support sags and stretches. In short time the link cannot carry its original rated capacity, hence blows prematurely.

In TRICO RENEWABLE FUSES the fusible strip is supported by a finely divided arc-choking powder. This powder acts as a support for the link when in plastic stage —prevents it from sagging and stretching. More: it helps to radiate the concentrated heat from the link—keeps it cooler—hence can stand 300% more overload and surge punishment than the bare link.

TRICO
REG U S PAT OFF.

RENEWABLE FUSES

They're "Powder-Packed"

LISTED AS STANDARD AND APPROVED BY UNDERWRITERS' LAB.

The FIRST and ONLY renewable fuses to furnish a "powder-packed," renewal element at the price of the lonely bare link.

Ferrul: Type TRICO Renewable Fuse and Powder-Packed Element.

Knife Blade Type TRICO Renewable Fuse and Powder-Packed Element.

TRICO FUSE MFG. CO.

MILWAUKEE, WIS.

QUALITY FUSES SINCE 1917

Many Beautiful Fabrics
With Real Silk and
Artificial Silk Filling
Are Being Woven
On Northrop Looms
You Should Know
What Is Being Done
Let's Talk It Over

DRAPER CORPORATION
Hopedale Massachusetts

Southern Office Atlanta Georgia

Copyright 1917 by Draper Corporation

New Quality in Warps from this Mild, Natural Air-Drying

Air-dried cotton warps have a loftiness, a full roundness, a desirable elasticity that cannot be obtained from the older method of drying warps in direct contact with hot metal.

When mild, natural drying is applied mechanically with the success and control that marks the work of the New Proctor Air Dryer a decidedly superior quality of warps is the result.

And so you find that such progressive firms as the Dixie Mercerizing Company, the Standard-Coosa Thatcher Company, the Belmont Processing Company, and a number of others, have turned to this new method and are turning out a product of new excellence.

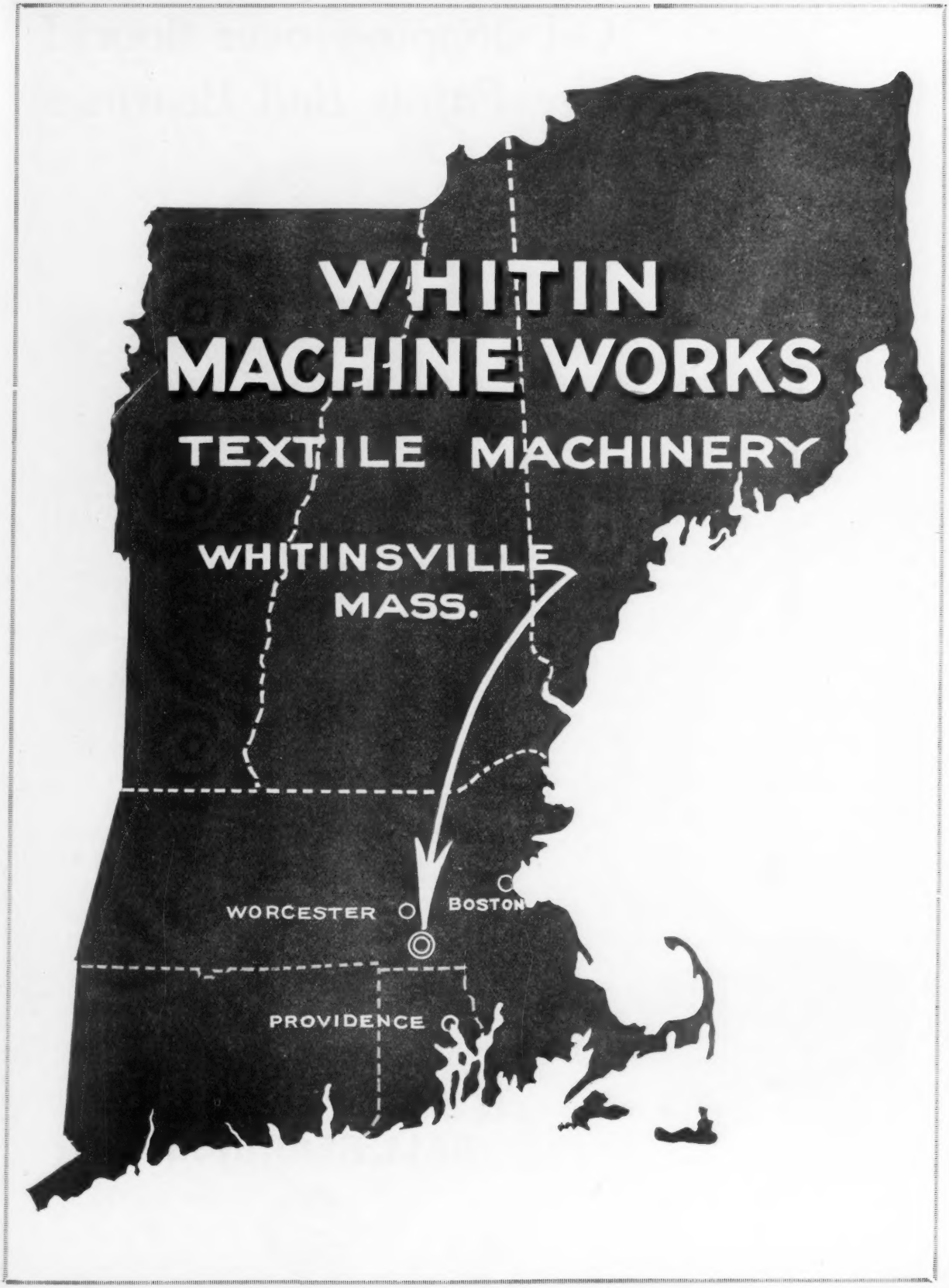
The cost of this new method compares very favorably with the old, which makes the improvement in results much more worth-while. This point is brought out in a survey by the A. C. Nielsen Company, independent investigators of processes and equipment, a copy of which we will mail to you on request.

(Left) New Proctor Air Dryer for Warps at Belmont Processing Co., Belmont, N. C.

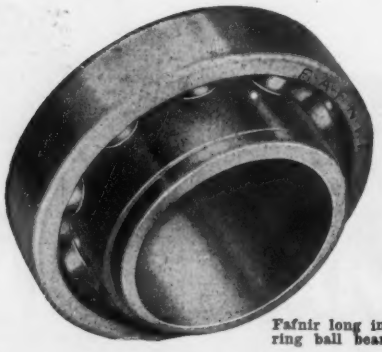
(Right) Partial View of Installation in Plant of Dixie Mercerizing Co., Chattanooga, Tenn.

PROCTOR & SCHWARTZ, Inc.

PHILADELPHIA


WHITIN
MACHINE WORKS
TEXTILE MACHINERY
WHITINSVILLE
MASS.
WORCESTER
BOSTON
PROVIDENCE

Oil slopping over floors?
Use Fafnir Ball Bearings



Fafnir long inner ring ball bearing

IF you are using plain bearings, and are having trouble with the lubricating oil spilling out over floors, machines, and produce, here is a suggestion—

Use Fafnir Ball Bearings.

Lubricant cannot leak out of the tightly sealed enclosures in which Fafnirs are mounted. Neither can dirt get in. The nuisance and fire hazard of oil covered floors are avoided. So, also, the danger of oil spotting and ruining the product. Cleanliness is promoted in every way.

Write for types, sizes, and prices.

THE FAFNIR BEARING COMPANY

Makers of high grade ball bearings—the most complete line of types and sizes in America.

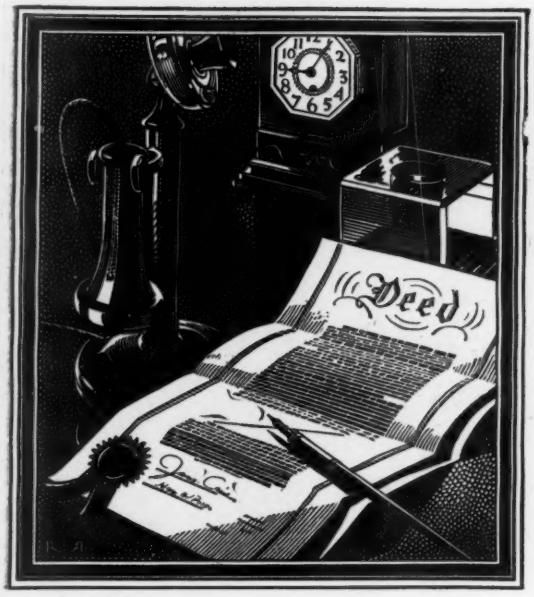
NEW BRITAIN, CONN.

Southern Representatives: A. G. Laughridge, 449 Peachtree St., P. O. Box 1847, Atlanta, Ga.; W. P. Cunningham, P. O. Box 1687, Houston, Texas; S. D. Berg, 207 So. Torrence St., Charlotte, N. C.; W. S Shirley, 120 Bourbon St., New Orleans, La.

FAFNIR
BALL BEARINGS

Molybdenum Steel Throughout IN BOTH RINGS AND BALLS

Pa. to Florida··· deal *closed* in 3 mins.



A PHILADELPHIA real estate man was seeking to buy a suburban property, but the woman who owned it was visiting in Florida. Letter after letter failed to secure the necessary terms. Then, to make matters worse, he learned that a competitor was after the property. He called the owner by Long Distance, got her promptly, and in 3 minutes settled the terms and made the purchase. Charges, $4.60. Amount involved, $25,000.

THOUSANDS OF TIMES DAILY, the long distance telephone renders a similar service to American business. Is a man too busy to leave his office? Does he dread a long trip? Is there an emergency? Is time important? Is it desirable to save expense? Long distance calls are the answer. Nearly any negotiation, purchase or sale that can be made face to face can be made in person by telephone.

The every-day use of the telephone for distant calls realizes many opportunities that otherwise would be lost. We suggest now that call across the state or continent that will clear up some pending transaction. We believe you will be surprised how little it will cost. . . . . *Number, please?*

BELL LONG DISTANCE SERVICE

Profitable Weaving

¶ Stafford Automatic Looms invariably weave a fabric of unsurpassed quality. They have the further advantage of simplicity of design and accessibility of parts making loom-fixing easy and up-keep cost low. Mills replacing obsolete or worn-out equipment by an installation of Stafford Looms are laying a safe foundation for greater profits over the coming years.

A representative of ours will gladly call to confer with you about this important matter

THE STAFFORD COMPANY

Weaving Machinery

READVILLE, MASS.

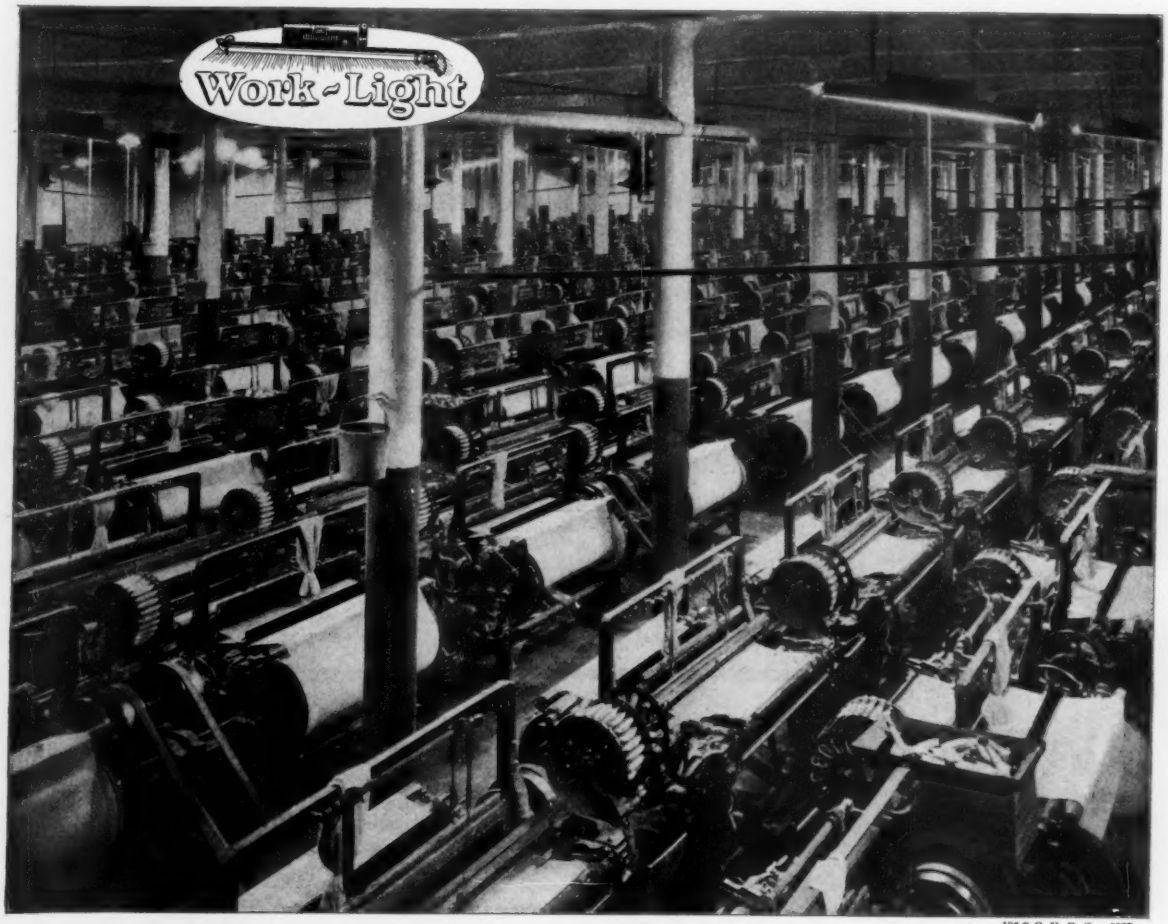
Southern Agent . . . . . FRED H. WHITE, Charlotte, N. C.
Paterson Office . . . . . 179 Ellison Street, Paterson, N. J.

19

The jury of cold production figures brought this verdict after trial

The picture illustrates the verdict: an ideal installation of Cooper Hewitt Work-Light in the main weave room of the Marion Manufacturing Company, Marion, N. C. For two years the effectiveness of Cooper Hewitt illumination was observed in the basement weave room. The testimony that won the case was a production 3.35% greater in the Work-Lighted basement than in the main weave room with its combination of incandescent and daylight.

Such an increase in quality output can't be laughed off under modern competitive conditions. Do you want a trial in your own plant, without obligation? Write Cooper Hewitt Electric Co., 89 River Street, Hoboken, N. J.

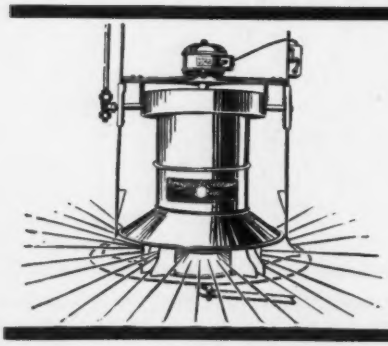


186 © C. H. E. Co., 1927

COOPER HEWITT

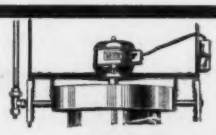
BETTER THAN DAYLIGHT

What Does High Duty in Humidifiers Mean?



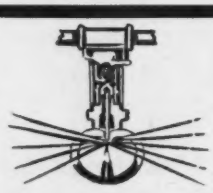
In your manufacturing equipment, you usually find the best is the cheapest in the long run. Even in Humidifiers, it is no different.

A Single Casing . . . a Double Air Current
A Patented Feature of ParkSpray High Duty



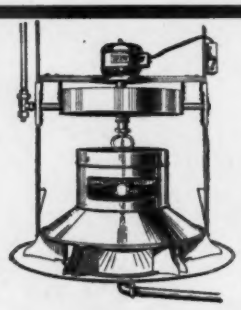
Repeated tests in laboratory and in the field show lowest wattage consumed.

Less Power is Consumed . . . *Much Less*



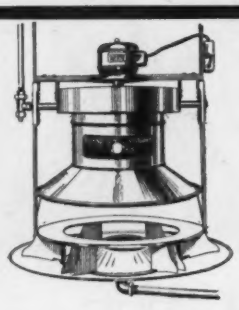
A most efficient spray nozzle reflects itself way back to the pump. Smaller pumps and motors and less power input.

More Water is Evaporated . . . *Much More*



Pump wattage plus head wattage, divided by gallons of water evaporated equals efficiency. Parks-Cramer High Duty Humidifiers give greatest efficiency.

Simpler . . . Stronger . . . Longer Life



To clean, the lower panel is raised; the upper is lowered. The whole casing assembly, cone and strainer may be removed easily.

Fewer Parts . . . Less Cleaning and Attendance

Accurate, Positive Regulation with ParkSpray Psychrostat makes even the High Duty better

Parks-Cramer Company
Engineers & Contractors
Industrial Piping and Air Conditioning
Fitchburg Boston Charlotte
Canadian Agents, W. J. Westaway Company, Ltd.,
Hamilton, Ontario. Montreal, Quebec.

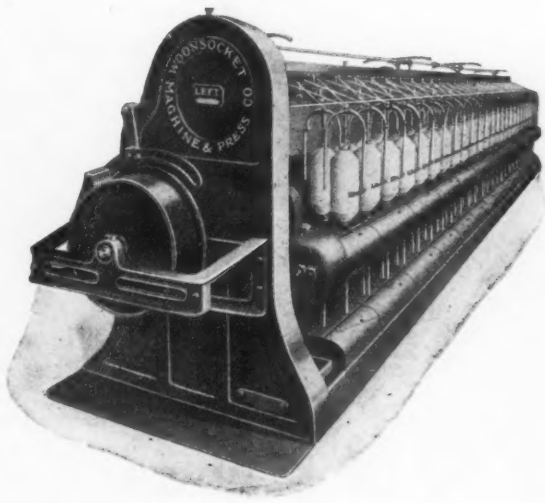
LONGER DRAFTS

The present tendency towards longer drafts on the spinning frame requires better and evener roving, for the resultant yarn can be only as even as the roving and in direct proportion to the draft.

Therefore, the carder must produce a better roving to enable the spinner to make yarn equal in evenness counts and breaking strength.

Woonsocket Roving will produce even roving inch by inch, yard by yard, layer after layer, bobbin after bobbin, at the lowest cost per pound.

Longer draft on spinning frames has increased the demand for New Woonsocket Roving Equipment.



Shall we mail you our Roving Machinery Catalog?

WOONSOCKET
ROVING FRAMES

Cotton Machinery

WOONSOCKET MACHINE & PRESS CO., INC.
Opening, Picker, Carding, Drawing and Roving Machinery
WOONSOCKET, R. I.

FALES & JENKS MACHINE COMPANY
Spinning and Twisting Machinery
PAWTUCKET, R. I.

EASTON & BURNHAM MACHINE COMPANY
Spooling, Warping and Winding Machinery
PAWTUCKET, R. I.

from Bale to Loom

Export Office: PAWTUCKET, R. I. *Southern Office*: WOODSIDE BLDG., GREENVILLE, S. C.

Approved

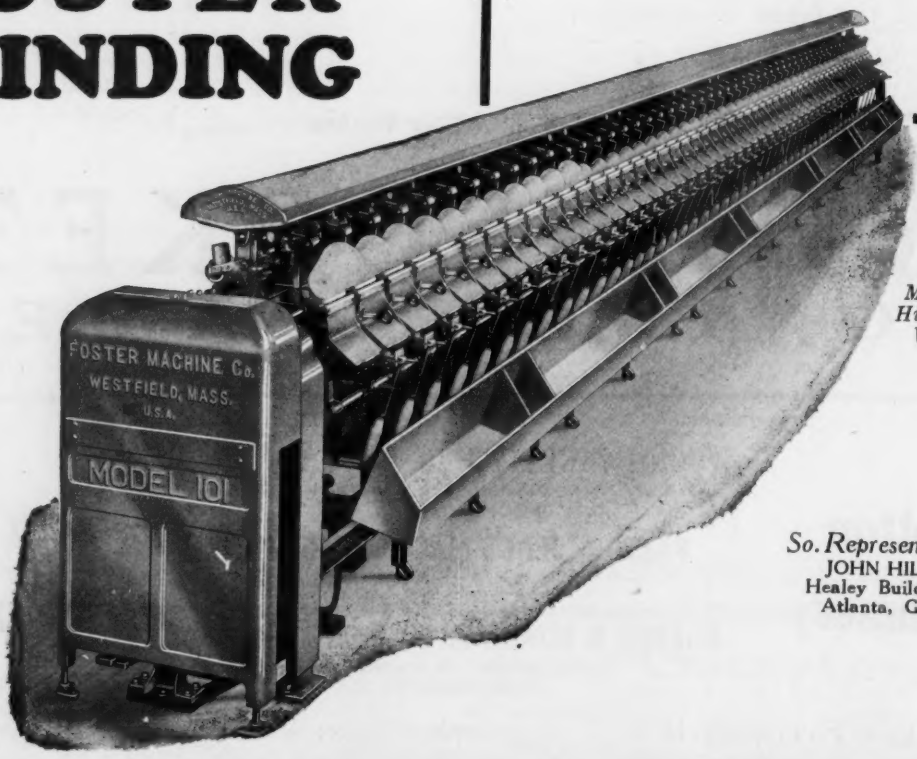
THE superiority of the Foster Model 101 Winder over older models includes over 100% more spindle production. The use of ball bearings in the Cone Mandrels and throughout the machine, allows a finer setting that produces more precise, neater wound packages which add to the market value of a Mill's product.

The Model 101 can be built with specially designed parts for winding tubes of even density for Brandwood, Franklin, Stanley and Theis Dyeing Systems.

"The usual Foster sturdy, simple construction."

FOSTER MACHINE COMPANY
WESTFIELD, MASS.

FOSTER WINDING

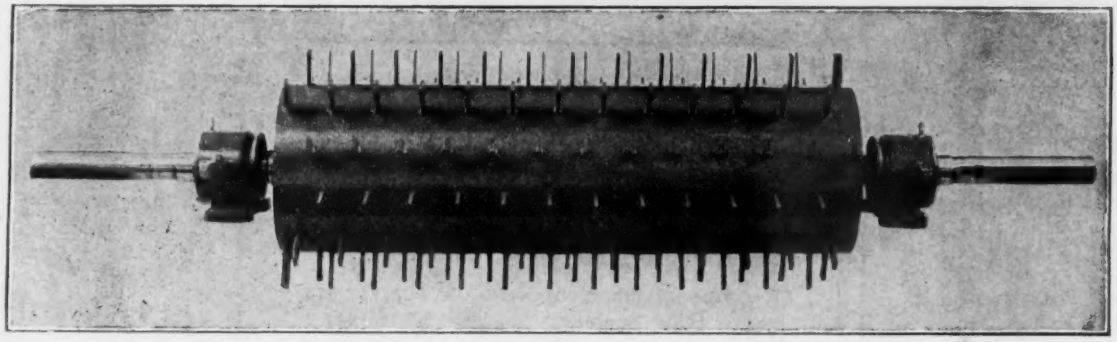


Foster Model 101 High Speed Winder

So. Representative
JOHN HILL
Healey Building
Atlanta, Ga.

Production Costs Shrink!
What an interesting comparison to be found in mill audit sheets before and after moving to the South! What a convincing argument they present for mill establishment in Seaboard Air Line Railway territory.
It shows in numerous items. Labor costs less. Raw material haulage is shorter. Power is cheaper. There is no elaborate heating system to fuel and keep up. There are fewer days lost to illness. Taxes are lighter.
Figure it out in dollars and cents for yourself. The net result will be an urge Southward. We serve the six states of Virginia, North Carolina, South Carolina, Georgia, Florida and Alabama. In this territory are opportunities which you should investigate. Why not let us present facts and figures regarding available sites along the Seaboard Air Line Railway? An inquiry entails no obligation. Negotiations confidential. Write:
Industrial Department
SEABOARD
AIR LINE RAILWAY COMPANY
NORFORK, VIRGINIA
Warren T. White,
Acting General Industrial Agent
John M. Howarth, Industrial Agent. 291 Broadway, New York
J. R. Page, Jr. Industrial Agent, Charlotte, N. C.
R. F. Monsalvatge, Industrial Agent, Atlanta, Georgia.

Two Staunch Friends of Stronger Better Yarn



The Aldrich Cylinder Beater

It preserves the natural strength of the cotton.

It cleans with half the beating necessary with other beaters.

It does not break up motes, leaf or staple.

The Scott Combination Automatic Power Yarn and Cloth Tester

It enables you to check accurately all experiments aimed at better breaking strength.

It furnishes you with a permanent, graphic record of tests, showing not only tensile strength, but elasticity.

We will be glad to equip you with both of these aids to a better product.

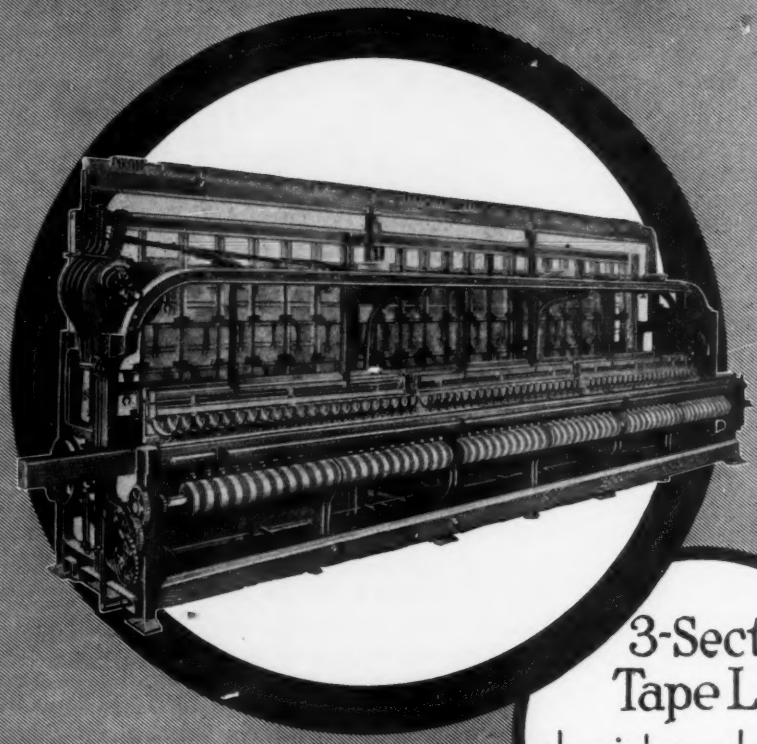
ALDRICH MACHINE WORKS

Greenwood, South Carolina

FLETCHER WORKS

Formerly Schaum & Uhlinger

LOOMS



3-Section Tape Loom showing complete loom with circular-shuttle batten

A Splendid Opportunity

The weaving of tape presents a splendid opportunity for the profitable investment of capital.

Cehap labor and highly-efficient machinery insure the successful manufacture of tape.

Fletcher Tape Looms are the recognized standard in the Nation's tape industry.

Let us send you complete information.

FLETCHER WORKS

FORMERLY SCHAUM & UHLINGER

Glenwood Avenue at Second Street **PHILADELPHIA, U. S. A.**

Builders of Dependable Hydro Extractors

Greater production --fewer spindles!

One of the outstanding features of the Carolinas industrially is the high production of their mills.

Credit the climate, the labor, the power, or what you will, the figures speak for themselves.

Late Government figures show 11,612,344 spindles in the Carolinas as against 16,872,289 spindles for New England. Yet the Carolinas show an average of 42% more active spindle hours with 31% less spindles.

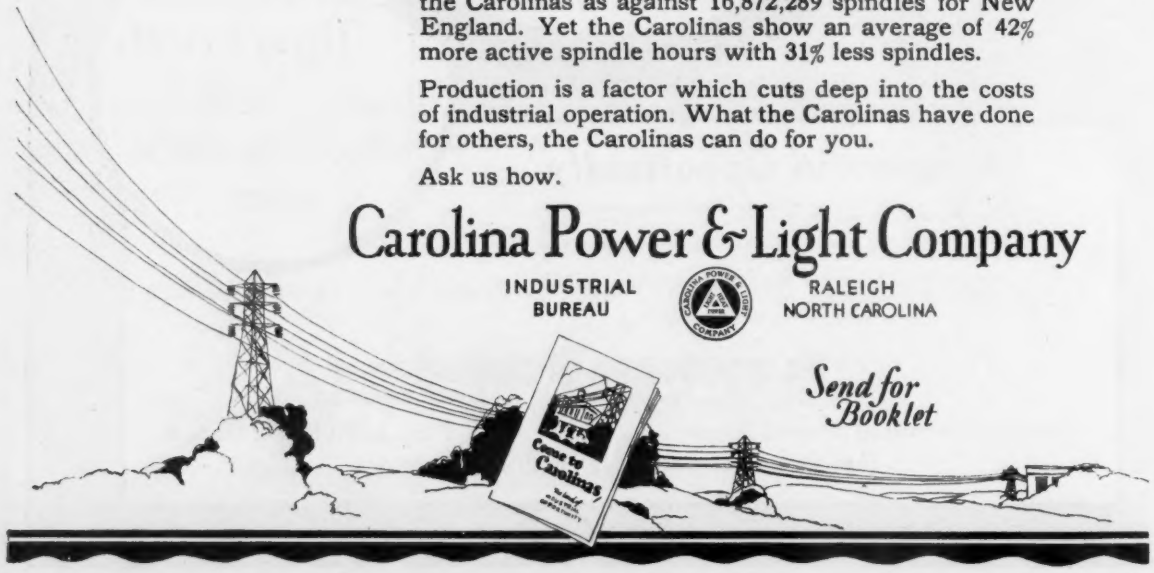
Production is a factor which cuts deep into the costs of industrial operation. What the Carolinas have done for others, the Carolinas can do for you.

Ask us how.

Carolina Power & Light Company

INDUSTRIAL BUREAU

RALEIGH NORTH CAROLINA



Send for Booklet

NEW
TUBIZE SUPER YARNS
in the finer range

IN response to the growing demand for sheer, thin and finer quality fabrics and materials, the Tubize Artificial Silk Co. of America announces the manufacture of *new* fine numbers of *super quality* yarns.

This grade can now be obtained in various sizes as fine as 35 denier and up to 100 denier.

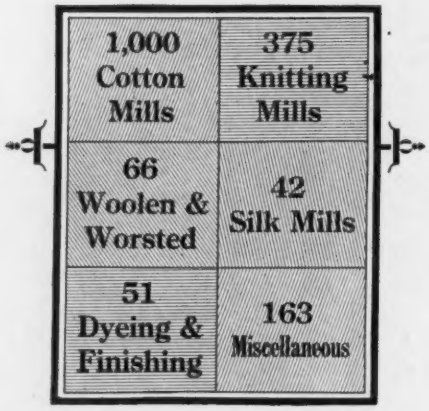
The new yarns are soft and clean and have the famous *Tubize strength* in every filament, in every size. They afford the manufacturer of first quality merchandise the opportunity to create beautiful new and sheer fabrics, now so fashionable, and to obtain results not possible with ordinary rayons.

We shall be pleased to supply samples in any of the new numbers. Our experts will gladly aid you to create any new fabrics and will suggest sizes and combinations which from our experience, will best serve your purpose.

TUBIZE ARTIFICIAL SILK CO.
of America
303 Fifth Avenue, New York
Factories: Hopewell, Va.

Tubize YARNS
"Reg. U. S. Pat. Off."
Brand Yarn *Made in U. S. A.*

WEAR LONGER BECAUSE THEY ARE STRONGER



This is the Era of Power in

SOUTH CAROLINA

WHATEVER line of textile manufacture you are engaged in, you will find plenty of company in the South, where there are more than 1,000 cotton mills, 375 knitting mills, 66 woolen and worsted mills, 42 silk mills, 51 dyeing and finishing plants and 163 miscellaneous textile enterprises.

Here is a community of business enterprise which assures you of the business help, the common interests, the skilled labor you need, without the crowding, the competition, the labor troubles which prevail elsewhere.

Here, too, if you locate in the South Carolina territory which we serve, you will find trunk line transportation to central markets and Atlantic seaports — soft, clear, sand hill water — and a source of electric power which never fails because it is generated both by steam and hydro plants. The water developments, already extensive, are being reinforced by the construction of the great Saluda Dam which will create the world's largest artificial lake and provide 200,000 horsepower.

South Carolina, already in the front rank of Southern textile states, is on the eve of a further great evolution, made possible by Power. Learn just what is taking place in South Carolina. Write our Industrial Development Division for detailed facts.

Broad River Power Company

COLUMBIA, SOUTH CAROLINA 50 PINE STREET, NEW YORK

"SONOCO"
Underclearer
Roll
A Permanent
Underclearer Roll
Covered with a fibre tube that is detachable and will outwear any cloth covering. Protected on ends by hard fibre washers so maintaining contact with steel rolls to extreme ends. The wooden rolls thus protected will last indefinitely.
Easy to Recover
When the covers are worn you have only to slip off the old tube and put on a new one, making the roll as good as new.
Specially Surfaced to catch the waste which is easily removed by pressing off with the hands.
Send us one of your rolls for size and we shall be glad to send you samples of the Sonoco Underclearer Roll, that you may by actual use demonstrate its superiority.
[Patented]
V. Waring Co. N.Y.

SONOCO PRODUCTS CO., Mfr.

CONES, TUBES AND CLOTH-WINDING CORES

512 BOOK STORE BLDG.
NEW BEDFORD, MASS.

MAIN OFFICE AND FACTORY
Hartsville, S. C.

W. J. WESTAWAY CO., Ltd.
HAMILTON, ONT.

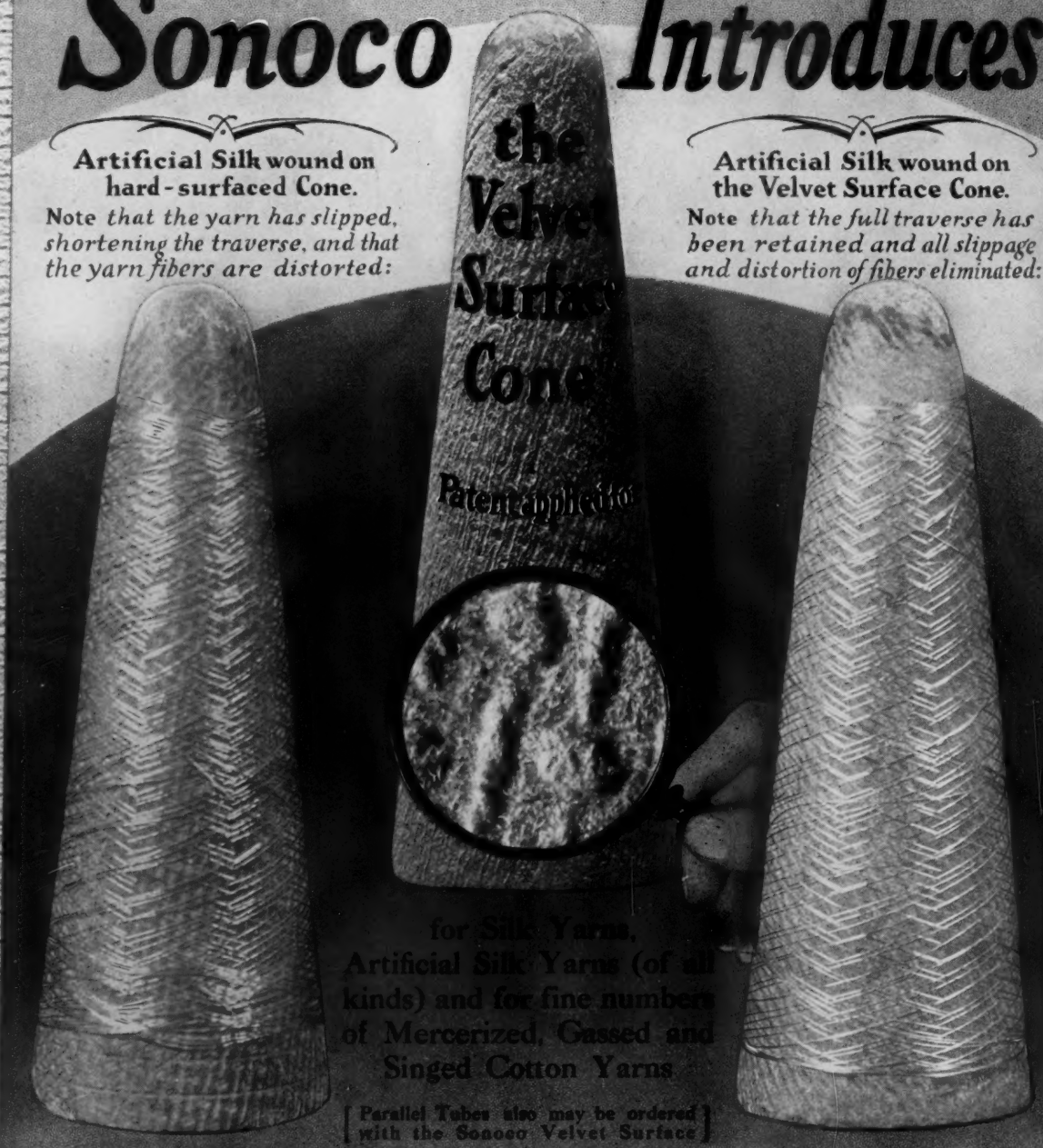
"Sonoco" Introduces

Artificial Silk wound on hard-surfaced Cone.

Note *that the yarn has slipped, shortening the traverse, and that the yarn fibers are distorted:*

Artificial Silk wound on the Velvet Surface Cone.

Note *that the full traverse has been retained and all slippage and distortion of fibers eliminated:*



for Silk Yarns, Artificial Silk Yarns (of all kinds) and for fine numbers of Mercerized, Gassed and Singed Cotton Yarns

[Parallel Tubes also may be ordered with the Sonoco Velvet Surface]

On the Velvet Surface Sonoco Cone the yarn lies in perfect position in the primary winding and assures a better delivery of the yarn, with minimum of waste. The converter and the knitter will both appreciate this.

SONOCO PRODUCTS CO., Mfrs.

CONES, TUBES AND CLOTH-WINDING CORES

512 BOOK STORE BLDG.
NEW BEDFORD, MASS.

MAIN OFFICE AND FACTORY
Hartsville, S. C.

W. J. WESTAWAY CO., Ltd.
HAMILTON, ONT.

V. V. Waring Co. N.Y.

To the Textile Executive

who is thinking of moving South, and would like to have definite facts from which to select the best location . . . .

Please Communicate

with our New York Office, 120 Broadway

SOME TIME ago we commissioned two of the outstanding engineering organizations in the textile field to make independent surveys of Georgia, reporting on labor, transportation, legislation, taxes, water, power, building costs, schools, churches and many other elements entering into the choice of mill sites.

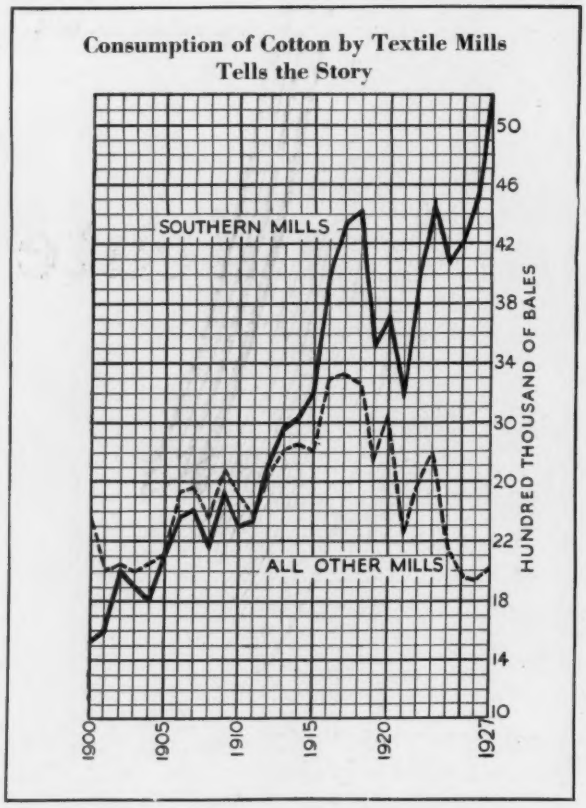
The reports, indicating the most desirable locations in Georgia, are now ready, and show tremendous opportunities for production economies which no mill executive can afford to overlook. Practically every factor shows a saving, and the conclusions drawn show clearly why more New England spindles have moved to Georgia during the past five years than to any other State.

We will be glad to place these reports before you, and suggest you communicate either with our New York office, at 120 Broadway, or with Georgia Power Company, Atlanta, Georgia.

GEORGIA POWER COMPANY

INDUSTRY PROSPERS IN GEORGIA

What will 1928 bring in Textiles?



IMPROVED conditions foreshadow a better year for the textile industry than the last few years have been. Yet the fundamentals are unchanged. The conditions that brought Eastern spindles flooding to the South are still present.

So 1928 will bring additional recruits to the ranks of Southbound mills. And the market for textile mill machinery will increase still further in the South.

What will the machinery producers do? Will they sit tight, still expecting the mill man to put up with the expense and delay of a thousand miles of distance between the textile center and the machinery maker? Or will they see the light, and move to Atlanta, from which center they can command their major market overnight?

You who buy textile machinery—point out to the salesmen who call on you the economy of operation in the Atlanta Industrial Area. It is to your advantage. The cost of your equipment must go into the cost of your goods. And every point on the cost cuts down your market.

Show them that raw materials, labor, power, taxes and many other vital factors spell production economy in the Atlanta Area. Show them that fifteen radiating railroad lines put Atlanta overnight to the whole Southern textile district.

Tell them to write the Atlanta Industrial Bureau for detailed facts, gathered first hand, unbiased—and presented, without cost or obligation, in the strictest confidence.

And if you are still operating in the East, let us show you how location in the Atlanta Industrial Area will put your prices in tune with the market—and leave you a good profit.

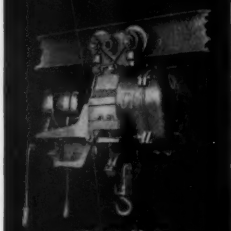
Write INDUSTRIAL BUREAU
787 Chamber of Commerce

ATLANTA
Industrial Headquarters of the South

Announcing a new C-M IDEA

Chisholm-Moore manufactures a complete line of overhead material handling equipment. Below are a few C-M Products. The catalog describes them all. Write for it.

Model K Cyclone



Electric Hoist

Double I beam crane

Matchless Trolley

Low Headroom Hoist

STOP WASTING MEN—GET A CM IDEA

The Most Efficient, Most Economical and Longest Lived, Light-Weight, High-Speed, Hand Chain Hoist Ever Built

The C-M Model K Cyclone

Built in ¼ to 6 ton capacities

The Model K one-ton hoist is the *Most Efficient*—it is 90% efficient—10% greater efficiency than other one-ton high-speed hoists,

Most Economical—it requires 18% less effort to lift the load than other one-ton high-speed hoists,

Longest-Lived—it has anti-friction bearings in all rotating parts; is built of special alloy steels and metals; operates in grease packing in a dust-proof, oil-tight housing, factors which insure a life—without repairs—considerably longer than that of any other one-ton, high-speed hoist.

These are features that mean important money savings—in quicker production, less labor time required, considerably less investment in hoist equipment, and the almost complete elimination of maintenance bills.

All Model K sizes are proportionately light, efficient, economical and long-lived. The Model K literature describes their construction and operation and shows clearly why they offer an unequalled savings opportunity. Write for it today.

THE CHISHOLM-MOORE MANUFACTURING CO.
5004 Lakeside Ave. Cleveland, Ohio
Branches: New York, Philadelphia, Chicago, Pittsburgh
Representatives in all Territories for Prompt Service

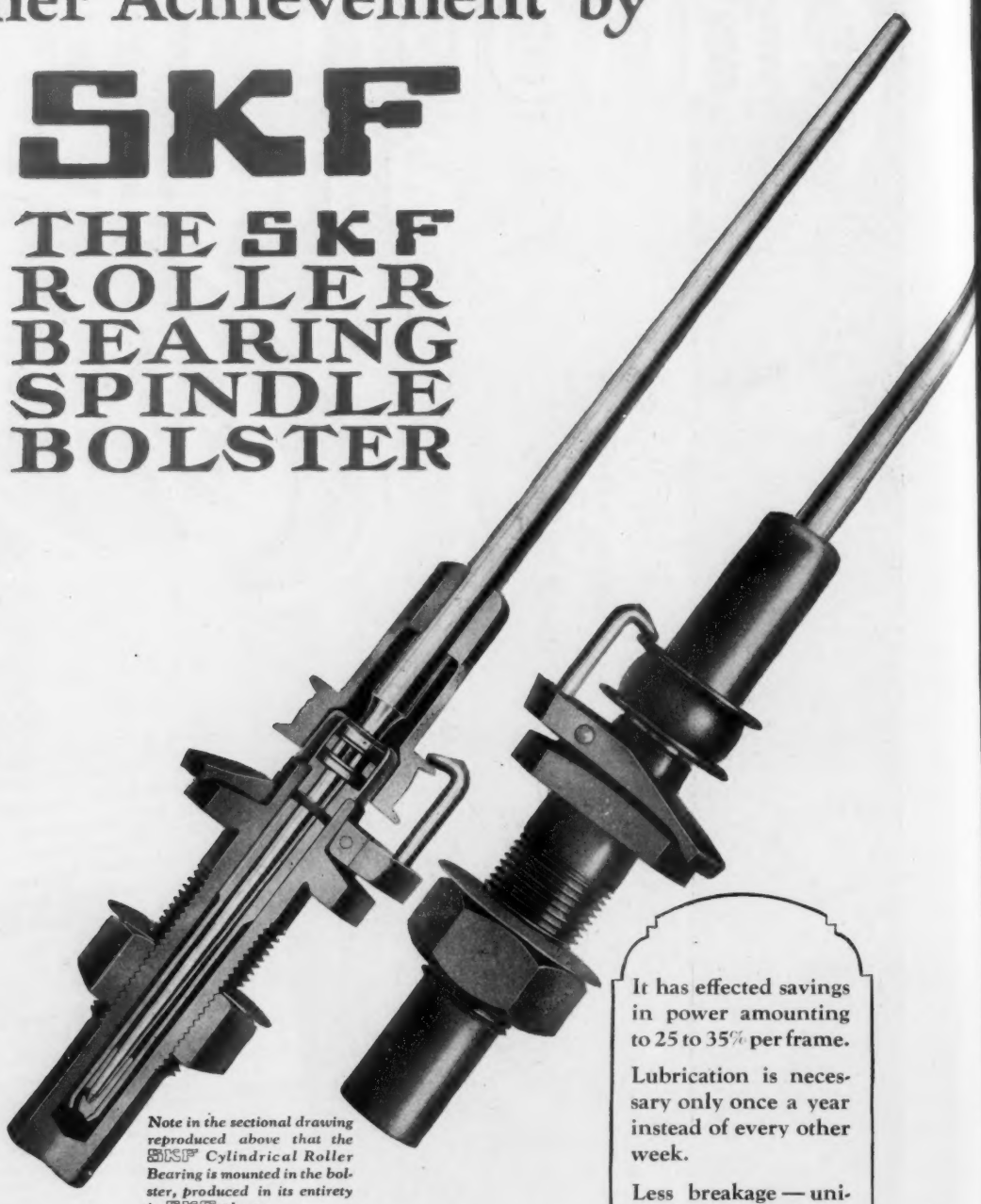
CHISHOLM-MOORE

CHAIN HOISTS — CRANES TROLLEYS CUPOLA CHARGERS — ELECTRIC HOISTS

Another Achievement by

SKF

THE SKF ROLLER BEARING SPINDLE BOLSTER



Note in the sectional drawing reproduced above that the SKF Cylindrical Roller Bearing is mounted in the bolster, produced in its entirety in SKF plants.

It has effected savings in power amounting to 25 to 35% per frame.

Lubrication is necessary only once a year instead of every other week.

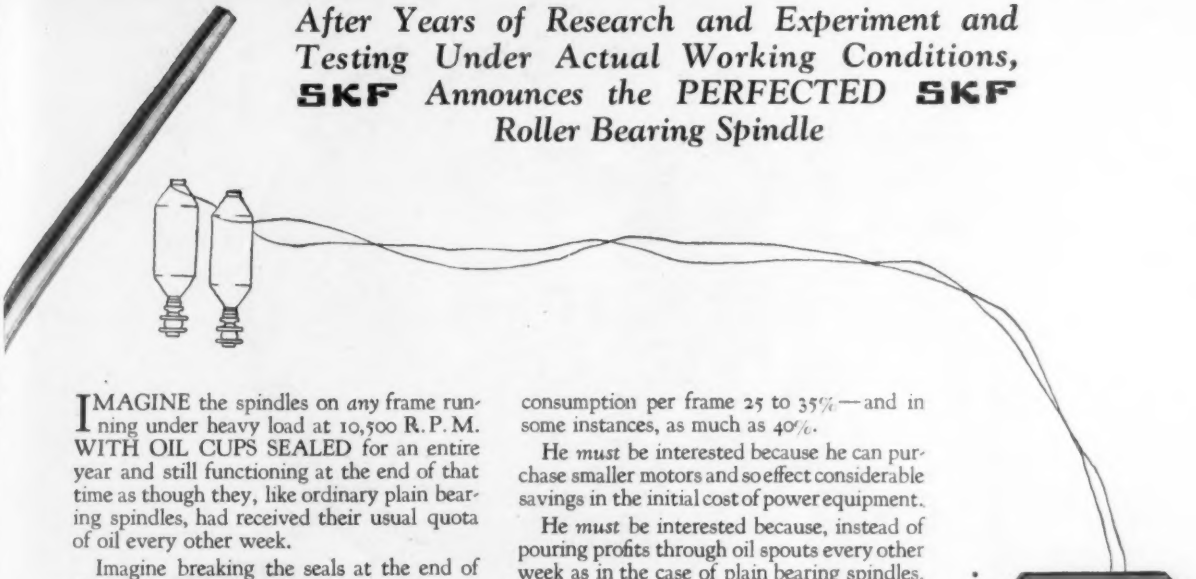
Less breakage — uniform twist — better yarn.

Increased production.

Absolute cleanliness of product and frames.

The complete spindle equipped with this Bolster is assembled and sold by all builders of cotton spinning machinery in the country.

After Years of Research and Experiment and Testing Under Actual Working Conditions, **SKF** *Announces the PERFECTED* **SKF** *Roller Bearing Spindle*



IMAGINE the spindles on *any* frame running under heavy load at 10,500 R.P.M. WITH OIL CUPS SEALED for an entire year and still functioning at the end of that time as though they, like ordinary plain bearing spindles, had received their usual quota of oil every other week.

Imagine breaking the seals at the end of the year and finding the oil in condition to warrant RESEALING the cups and running the frame another year!

Imagine one H.P. driving 72 spindles under test instead of the maximum load of 50 where plain bearings were employed in the same test!

Yet, these are just a FEW of the facts concerning the SKF Roller Bearing Spindle, developed under both laboratory and actual working conditions during the past six years.

By applying a specially designed SKF Cylindrical Roller Bearing between the blade of the spindle and the inner wall of the bolster, SKF engineers have succeeded in producing an anti-friction spindle in which every operator in the country *must* be interested.

He *must* be interested because this new spindle has in many cases reduced power consumption per frame 25 to 35%—and in some instances, as much as 40%.

He *must* be interested because he can purchase smaller motors and so effect considerable savings in the initial cost of power equipment.

He *must* be interested because, instead of pouring profits through oil spouts every other week as in the case of plain bearing spindles, he need oil the SKF Roller Bearing Spindle only once a year.

He *must* be interested because in the SKF Roller Bearing Spindle, oil cannot be thrown off to soil the yarn—because greater uniformity of speed means better yarn on account of uniform twist—because breakage is curtailed—because the high peak load usually encountered in starting is greatly reduced.

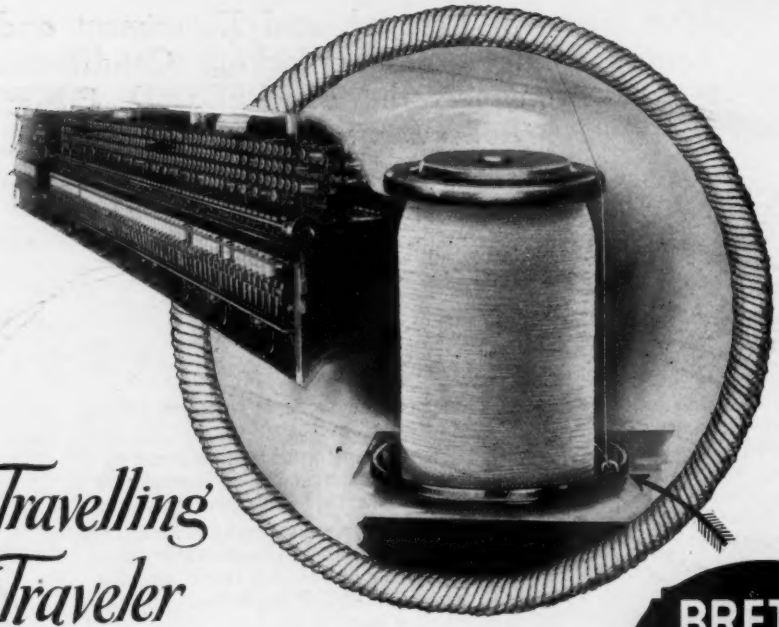
SKF Industries, Incorporated, produce only the roller bearing equipped bolster of this new anti-friction spindle. The complete spindle equipped with the SKF Roller Bearing Bolster, may be purchased through all builders of cotton spinning machinery in the country.

Write for booklet containing full information concerning this latest SKF achievement.

SKF INDUSTRIES, INC., 40 East 34th Street, New York, N. Y.

1919

More than 100 Factory Offices Throughout the World
SKF
Puts the Right Bearing in the Right Place
72
But under the same test, one H.P. drove 72 SKF Roller Bearing Spindles.
50
One H.P. under test drove only 50 plain bearing spindles.
In one mill SKF Roller Bearing Spindles have been running for two years with oil chambers sealed.
It has reduced power input per frame 25 to 35%.
It has reduced oiling to once a year detail.



Easier Travelling for the Traveler

BRETON TWISTER RING GREASE

COTTON Yarn Manufacturers now have in "Breton" Twister Ring Grease, a lubricant which *at once and lastingly* destroys the annoying and expensive frictional affinity between the twister ring and the traveler.

"Breton" is of a consistency sufficient to sustain lubrication against frictional heat developed in high speeds, thus saving traveler replacement. It leaves no "heel."

For instance . . . let's see the expression of a representative mill concerning performance . . .

> "On a spindle fitted with rings 4½" diameter using a No. 7 traveler ——
>
> Running at 4,000 r.p.m., we are accustomed to a continuous run of twenty-three hours ——
>
> Using a 23-25 count with a pull of 12 to 14 ounces in the cord."

A ring lubricant that will give 1230 miles service on a single application *yields yarn production.* Judge the value for yourself!

Possibly a working sample would be interesting to you

BORNE SCRYMSER COMPANY

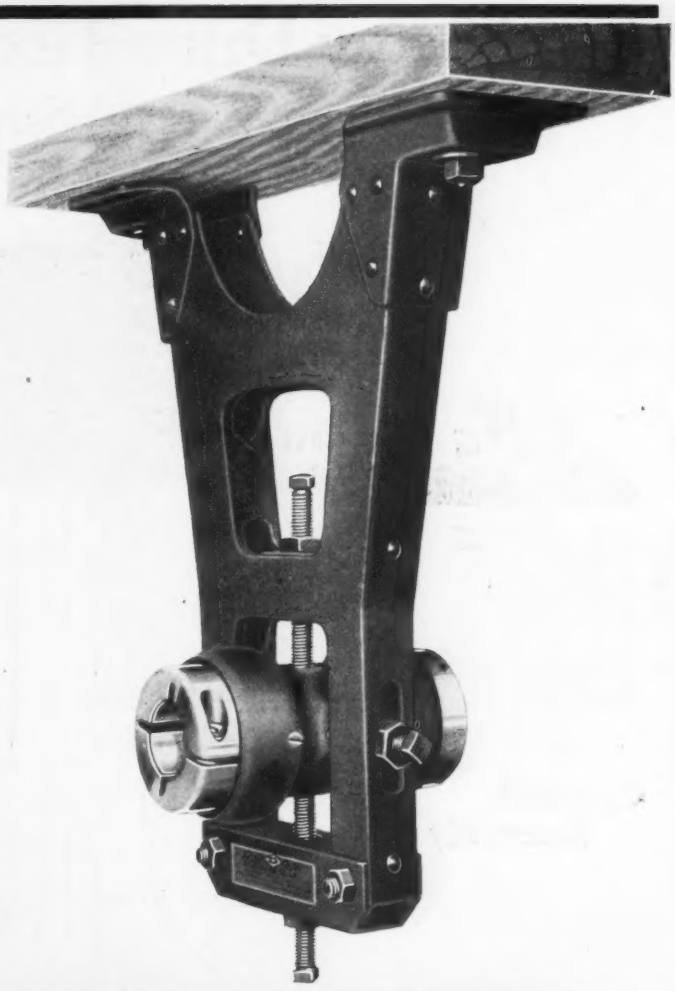
17 BATTERY PLACE, NEW YORK

Clean!

The steel sealed Dodge-Timken Hanger Bearing was selected by the Unity Cotton Mills as well as by others because a minimum of lubrication is needed and the housings are effectively closed to prevent leakage and consequent injury to goods in process.

Wherever close attention is given to every means for improving quality, production and economy, Dodge-Timken transmission appliances merit careful consideration.

An interesting bulletin can be had for the asking.

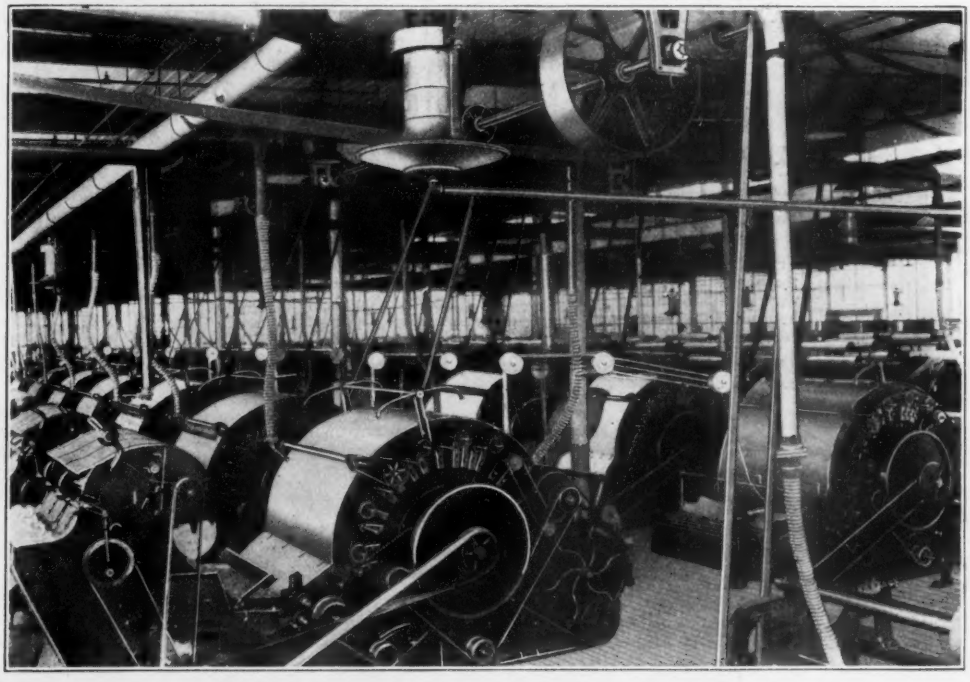


DODGE MANUFACTURING CORPORATION

Factories at Mishawaka, Ind., and Oneida, N. Y.
General Offices, Mishawaka, Ind.

Branches: New York, Boston, Newark, Philadelphia, Oneida, Cleveland, Cincinnati, Atlanta, Houston, St. Louis, Minneapolis, San Francisco

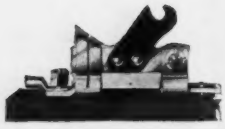
DODGE TIMKEN



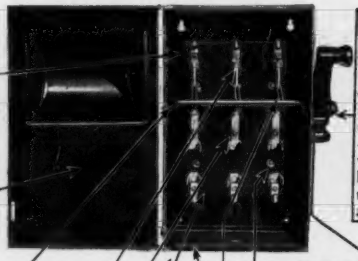
For Heavy Duty Textile Mill Service

Type WK-60 Safety Switch

250, 500 and 600 Volts A-C.—250 Volts D-C.



The Diamond Pointed Jaw and Extended Blade for Longer Life.


Simplified construction of entire interior mechanism of switch.
The mechanism itself is so designed that when opening or closing it has a cushion effect with an ultimate limit of travel—a big reduction of wear and tear on blades and jaws since no blocks or stops are used.
Special black marine finish.
Iron parts subject to corrosion galvanized or copper plated.
Simplified construction of quick-make and quick-break mechanism enclosed in handle.
Special switch jaw—contact surface is not burned on interrupting the current a new Westinghouse feature.
To remove switch base, it is only necessary to loosen four screws.
Terminals for motor testing.
Blade brackets of micarta, highest grade insulating material.
Highest grade purple Vermont slate used.
Plenty of wiring space.
Suitable knockouts in sides and back.

Spot Welded Nut. Extra threads give greater holding strength for base.

Operated Externally

Quick Make Quick Break

SNAP!

SNAP! and it's on or off in a flash—practically eliminating the possibility of destructive arcing. Here's a quick make and break switch that's positive and fast.

Its simple design, rugged construction and easy accessibility assure a low maintenance cost.

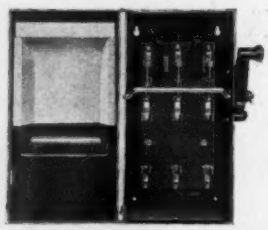
The extremely simple, quick, positive make and break mechanism is contained in the handle, leaving the cabinet entirely clear. The blades are brought to rest with a cushion effect, without the use of blocks or stops, thus eliminating the destructive hammering of the blades. Ample wiring space and numerous knockouts are provided.

Ask your Westinghouse representative or write today for Catalog 41-A giving complete details.

Westinghouse Electric & Manufacturing Company
Merchandising Department
Mansfield Works Mansfield, Ohio

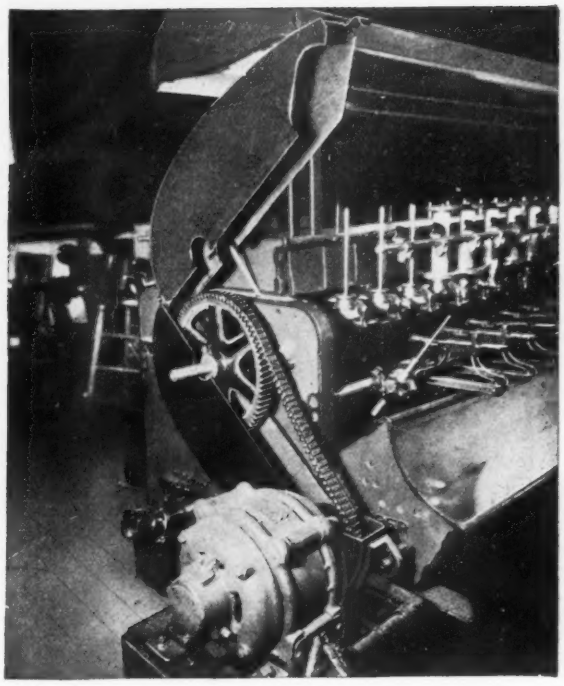
Westinghouse

X95511



60 Amperes, 3 Poles, 600 Volts Open K-60024.

Reducing costs in textile mills



Morse Silent Chain Drive from motor to spooler.

Modern machines, efficient labor, the best methods—all of these will help, but what about power transmission as an opportunity for cost reduction in your mill?

After a thorough analysis of their power drives, many textile plants have found that Morse Textile Drives greatly reduce power consumption through efficient operation. They are 98.6% efficient, positive, flexible, ideal for short centers.

Let the nearest Morse Transmission Engineer show you how Morse Drives are serving mills similar to your own.

MORSE CHAIN CO., ITHACA, N. Y., U.S.A.

Morse Engineers are always available at:

ATLANTA, GA. ..... 702 Candler Bldg.
Earl F. Scott & Co.
BALTIMORE, MD ..... 1002 Lexington Bldg.
BIRMINGHAM, ALA. ..... Moore-Handley Hdw. Co.
BOSTON, MASS. ..... 141 Milk St.
BUFFALO, N. Y. ..... Ellicott Square Bldg.
CHARLOTTE, N. C. ..... 404 Commercial Bank Bldg.
CHICAGO, ILL. ..... 112 W. Adams St.
CLEVELAND, OHIO ..... 421 Engineers Bldg.
DENVER, COLO. ..... 211 Ideal Bldg.
DETROIT, MICH. ..... 7601 Central Ave.
LOUISVILLE, KY. ..... 516 W. Main St.
E. D. Morton Co.
MINNEAPOLIS, MINN. ..... 413 Third St.
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A. M. Lockett & Co., Ltd.
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Strong-Scott Mfg. Co
WINNIPEG MAN., CAN. ..... Dufferin St.
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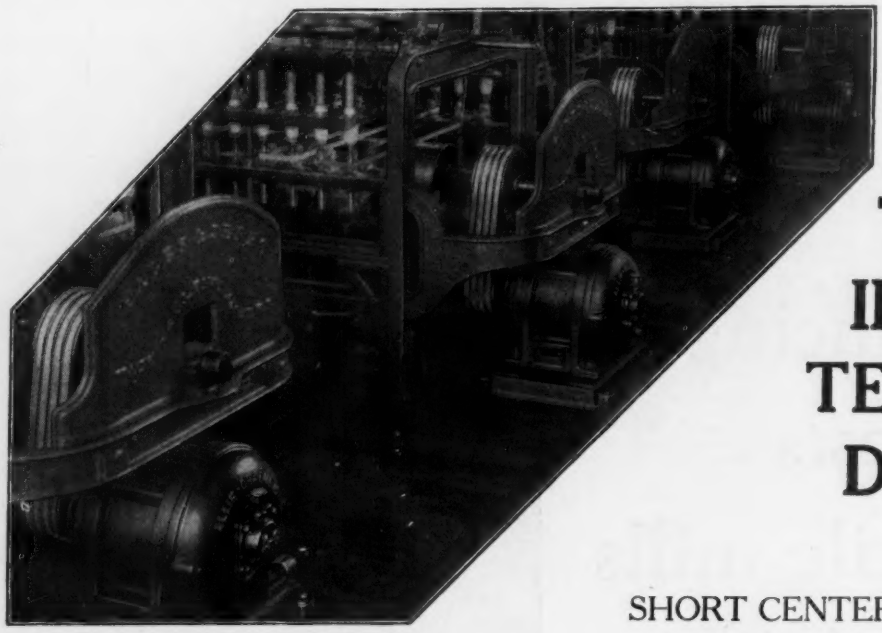
1882

MORSE SILENT CHAIN 55 DRIVES



Allis-Chalmers Texrope Drives and Timken Bearing Motors

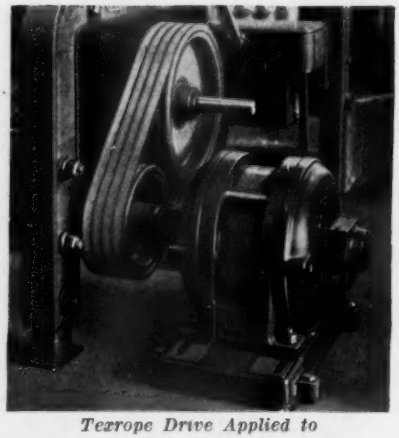
THE IDEAL TEXTILE DRIVE

SHORT CENTER, FLEXIBLE, SILENT AND CLEAN

MILLS equipped with Allis-Chalmers Texrope Drives (Patent Pending) and Allis-Chalmers Timken Bearing Motors are kept in better physical and mechanical condition with less effort and expense.

The percentage of lost time, or of time devoted to other than productive work, is held at the minimum. Higher production and higher quality of product is the result.

Many of the largest and most progressive mills have adopted this combination exclusively. Many others are changing over as rapidly as possible. We will be glad to explain its numerous advantages.



Texrope Drive Applied to Cotton Twister

WRITE FOR BULLETIN No. 1228-E

ALLIS-CHALMERS MANUFACTURING COMPANY

MILWAUKEE, WIS.

DISTRICT SALES OFFICES IN ALL PRINCIPAL CITIES

ALLIS-CHALMERS TEXROPE DRIVE

Proved!

"Monel Metal machinery is the most flexible that can be used—"

O. E. SELLARS, PRESIDENT
B. V. MAY, VICE-PRESIDENT
E. M. LONG, MANAGER
W. H. MAY, SEC. & TREAS.

NATIONAL DYE WORKS Inc.
Dyeing Bleaching and Finishing
ALL GRADES HOSIERY
BURLINGTON, N.C.

August 27, 1927.

The American Laundry Machinery Co.
Specialty Department
Norwood Station
Cincinnati, Ohio.

Gentlemen:

As operators of the largest hosiery dyeing establishment in the South, we have recognized the need for efficient machinery. Starting out with wooden equipment many years ago, we quickly replaced that equipment with brass machines when this latter type came into use. We were among the very first to try out the Monel Metal machines, and after finding this equipment superior, we promptly changed over our entire plant.

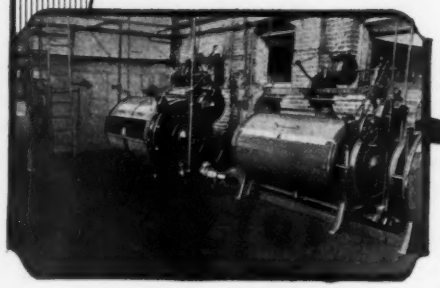
Monel Metal machinery is the most flexible that can be used for hosiery dyeing purposes. Not only are we able to dye all colors in this machine, but we are also using them for the bleaching of silk, rayon, and cotton hosiery.

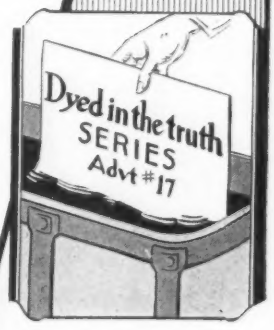
The speed with which we can change from one color to another, or from dyeing to bleaching, enables us to secure maximum production from a minimum number of machines, and enables us to use every square inch of floor space to the fullest possible advantage.

Yours very truly,

NATIONAL DYE WORKS, INC.

E. M. Long
Gen. Mgr.





Monel Metal rotary dyeing machines in the plant of the National Dye Works, Inc., Burlington, N. C. Mfd. and installed by THE AMERICAN LAUNDRY MACHINERY CO., *(Specialty Dept.) Cincinnati, Ohio.*

SEND FOR "LIST B" OF MONEL METAL & NICKEL LITERATURE

Monel Metal is a technically controlled Nickel-Copper alloy of high nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trade mark.

INCO MONEL METAL TRADE MARK

MOnel metal

INCO MONEL METAL TRADE MARK

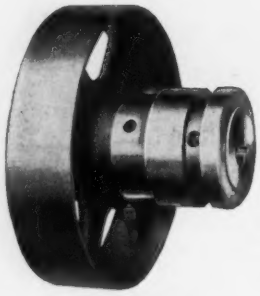
THE INTERNATIONAL NICKEL COMPANY (INC.), 67 WALL STREET, NEW YORK CITY

THE JOHNSON FRICTION CLUTCH

as used

On the Johnson Ribbon Finishing Machine

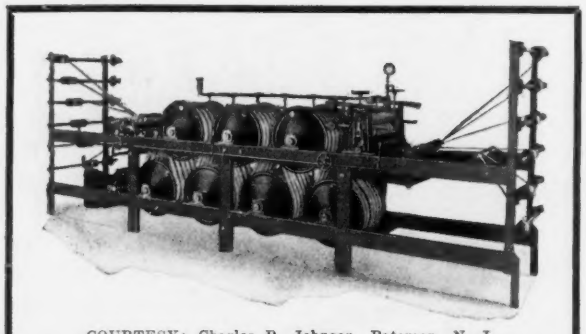
in the Textile Industry



Single Clutch with Pulley

A No. 5 JOHNSON Single Friction Clutch is used on this ribbon machine and is giving highly satisfactory service. The machine finishes heavy ribbons, such as hat-bands and other grosgrains.

Try out a JOHNSON on Your Next Machine



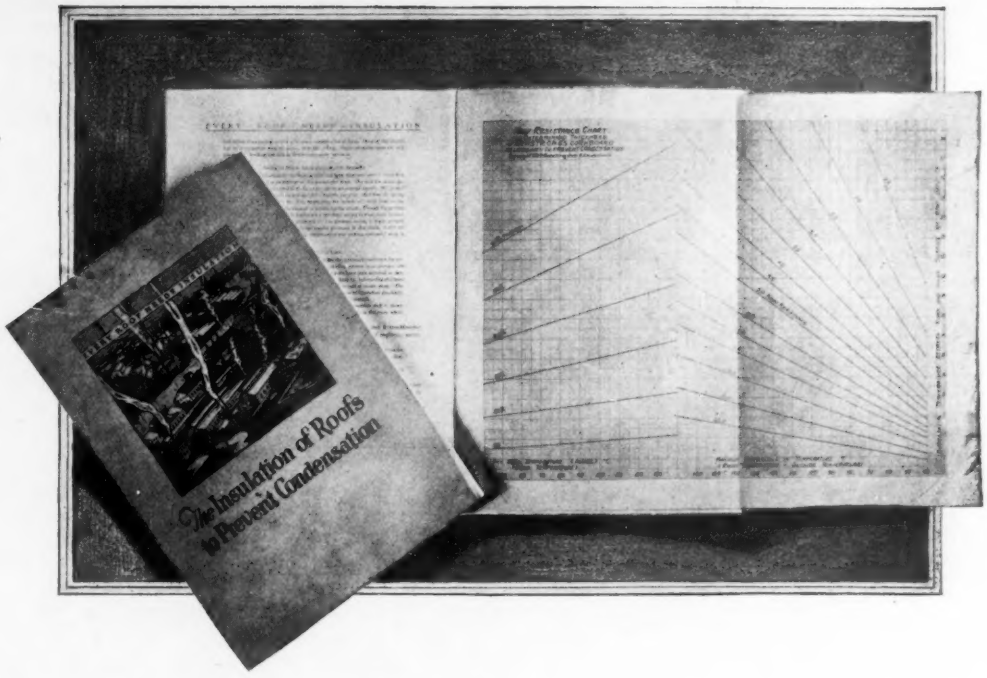
COURTESY: Charles B. Johnson, Paterson, N. J.

Faultless performance has made the JOHNSON the ideal clutch for textile machines. JOHNSONS are adapted to meet every clutch need on ribbon finishing machines, dye jigs, tenters, in fact on every textile machine built. Smooth-starting. Prompt-stopping. Perfect reversing. Our 7 x 10 clutch bulletins describe hundreds of installations. Yours on request.

Day after day JOHNSON Clutches go out of our plant, ten, thirty, fifty at a time, for textile machines of all kinds. And these clutches SELDOM COME BACK! Kept in service year upon year. This is because they are absolutely satisfactory, useful and capable. Get our data. Equip with JOHNSONS.

Write for Catalog "G"

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN



This book tells how to stop condensation

DO your ceilings sweat and drip when the weather turns cold? Then by all means send for this book, "The Insulation of Roofs to Prevent Condensation." It tells in a comprehensive manner how these evils may be eliminated.

Every phase of insulation for mill roofs is approached from a scientific, yet practical, standpoint in this Armstrong publication. For example, included in its contents is an easy-to-use chart for determining the exact thickness of insulation necessary to prevent condensation under any given conditions. This chart, as well as other data presented, is based on the long experience of the Armstrong engineers in designing insulation for all kinds of conditions.

If condensation on ceilings is one of your troubles, send in the coupon at once for a free copy of this book. It will bring you information you will be glad to have, and it may be the means of saving you actual dollars and cents. Address

Every roof needs insulation

ARMSTRONG CORK & INSULATION COMPANY
(Division of Armstrong Cork Company)
185 Twenty-fourth Street, Pittsburgh, Pa. McGill Bldg., Montreal Que.
Armstrong Cork Company, Ltd., Sardinia House, Kingsway, London W. C. 2, England
Branches in the Principal Cities of the United States

Armstrong's Corkboard Insulation

for the Roofs of All Kinds of Buildings

ARMSTRONG CORK & INSULATION CO.,
185 Twenty-fourth Street,
Pittsburgh, Pa.

GENTLEMEN:—You may send me free of charge your new book, "The Insulation of Roofs to Prevent Condensation."

Name.....

Address.....

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Nov.

ARCO-RAYS

"LENGTHENS YOUR DAYS"

REG. TRADE MARK U.S. PATENT OFFICE

An Interior White Paint

"Declare War On Shadows with Spray Gun and Brush"

Shadows in your plant threaten production. They make it difficult for your men to give you the most efficient and accurate work possible.

Arco-Rays will eliminate these conditions . . . by scattering abundant daylight into every corner. It will diffuse daylight into the parts of your plant where it is needed most . . . away from the windows.

Repeated washing, made necessary by dirt, smoke and fumes will not harm its smooth, close-knit surface. Walls and ceilings can be finished with Arco-Rays and forgotten.

This paint forms a tough, elastic finish that literally becomes part of the wall.

May we put you in touch with plant owners who have lighted their ways to increased production? Let them tell you how Arco-Rays did it. How many names shall we send you?

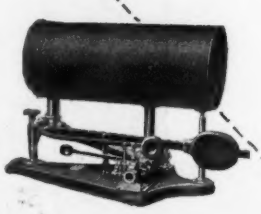
THE ARCO COMPANY · · CLEVELAND · OHIO

PAINTS · VARNISHES · ENAMELS · LACQUERS

When you play with Waste *you are bound to Lose*

Inefficient steam drainage **or** ***waste*** **... they're one and the same. You can't win, because the dice are loaded. Not only does inefficient drainage give you poor steam circulation, but means waterlogged heating surfaces and boosts fuel costs ... losses that are easily and thoroughly overcome by the Morehead System. It drains condensation as it forms, and speeds this condensate back to the boiler *hot*. By doing this, it saves valuable heat units, gives increased production, better quality of product, less labor and decreased fuel costs. May we send you complete information? After all, there is no time better than the present. Why not write us today?**

MOREHEAD MANUFACTURING COMPANY
DEPARTMENT "C" DETROIT, MICHIGAN
(208)



Morehead
Back to Boiler
SYSTEM

Morehead
Mfg. Co.
Dept. "C"
Detroit, Michigan
You may send me complete information regarding the Morehead Back-to-Boiler System.

Name_____
Company_____
Position_____
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Birmingham, Ala. — Pittsburgh, Pa.
Joplin, Mo. — Roswell, N. M.
Atlanta, Ga. — Philadelphia, Pa.
Jacksonville, Fla. — Kansas City, Mo.
St. Paul, Minn.

THE "American" S. I. pump is a horizontal, split shell, 2-stage pump, furnished with bronze enclosed impellers, labyrinth bronze wearing rings, bronze shaft sleeves, and bronze split glands. The pump has ring oiling bearings with a ball thrust on the outboard bearing to take care of any unbalanced thrust which may occur.

This pump is designed with opposed impellers, which take care of end thrust. The impellers are single suction type, and are hand filed and properly designed to give the highest efficiency possible. The pump is provided with a flexible coupling of the pin and bushing type to connect to prime mover.

The bearings of the pump are entirely separate from the stuffing boxes which eliminates the possibility of grit in the bearings. However, the reservoirs are large, furnishing a liberal supply of oil. The stuffing boxes are water sealed, so as to insure tight packing without excessive pressure or friction on the revolving shaft.

This pump is furnished in sizes from 1¼ in. to 10 in., capacities up to 4000 g. p. m., and total heads of 500 ft. on the larger sizes and capacities.

Write for catalogue to the nearest office.

THE AMERICAN WELL WORKS

General Offices AURORA, ILLINOIS *and Factory*

Arrest Friction—the Thief of Power

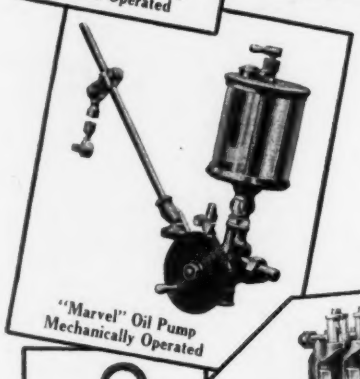
INSURE POSITIVE DELIVERY OF THE CORRECT AMOUNT OF LUBRICANT, WITHOUT WASTE, BY USING

LUNKENHEIMER LUBRICATING DEVICES

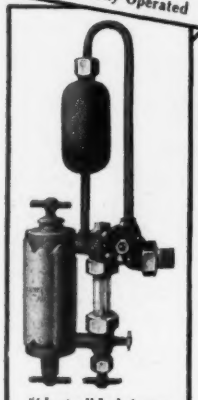
The Lunkenheimer Company manufactures a complete line of Lubricating Devices — Oil Pumps, Lubricators, Oil and Grease Cups, in a wide range of patterns, sizes and capacities.

If you will sign and mail the coupon appearing below, interesting descriptive literature will be sent to you. No obligation.

"Alpha" Oil Pump
Hand Operated



"Marvel" Oil Pump
Mechanically Operated

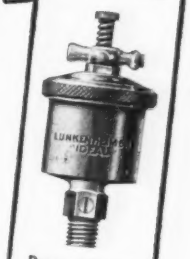


"Junior" Lubricator
Hydrostatic
Single Connection

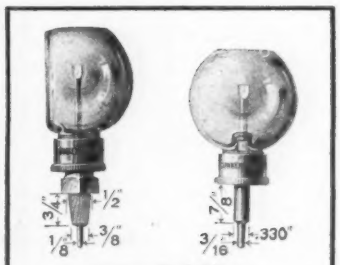
"Invincible" Oil Pump
Mechanically Operated

"Sentinel" Oil Cup
With Sightfeed

Steel "Ferro"
Grease Cup



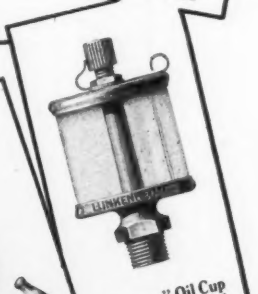
Bronze "Ideal"
Grease Cup



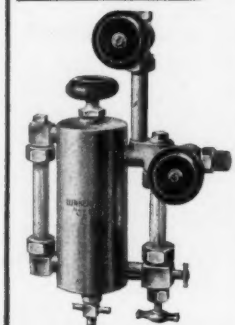
Bottle or Shaft Oilers

Taper Wood Plug Flat Side or Globe Body

Blank Metal Shank Globe or Flat Side Body



"Pioneer" Oil Cup
Without Sightfeed



"Senior" Lubricator
Hydrostatic
Double Connection

"Emblem" Lubricator
Air Compressor Type

THE LUNKENHEIMER CO.

"QUALITY"

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LUNKENHEIMER
SINCE 1862

Check the articles in which you are interested and mail for descriptive literature.

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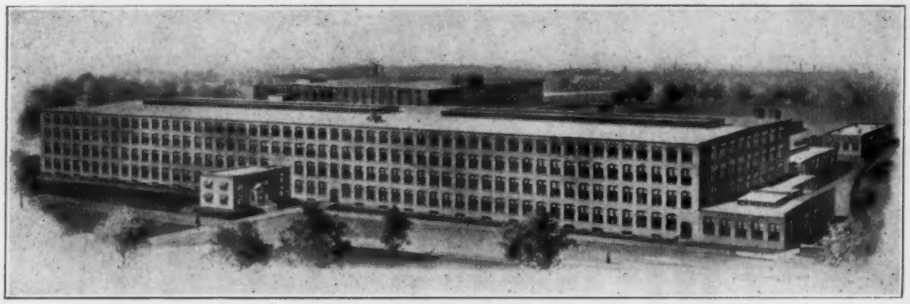


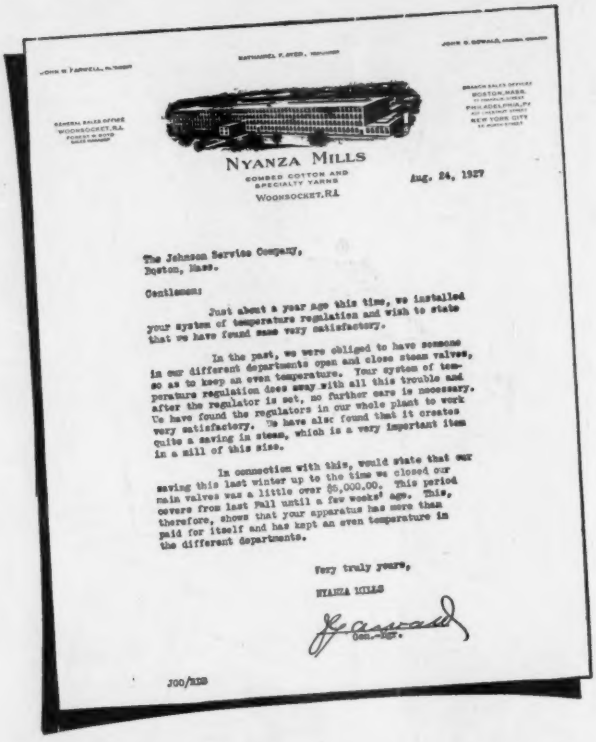
NYANZA MILLS, WOONSOCKET, R. I.

This Johnson System Paid for Itself In Less than a Year

These are the facts as given in the letter from Nyanza Mills, reproduced at the right, which admits a fuel saving in excess of $5000—more than enough to pay for the installation of the Johnson System of temperature control.

Increased production is also a noticeable advantage to be gained by the adoption of the Johnson Thermostatic Control — since it maintains the right temperature for bodily comfort of the operatives and for the machinery and materials in process.

Johnson Thermostats are giving splendid service to thousands of industrial institutions throughout the country. Why not investigate the advantages that you can secure through this service. A Johnson representative who is near you will be glad to estimate on your requirements—without the slightest obligation on your part.



NYANZA MILLS
COMBED COTTON AND SPECIALTY YARNS
WOONSOCKET, R.I.

Aug. 24, 1927

The Johnson Service Company,
Boston, Mass.

Gentlemen:

Just about a year ago this time, we installed your system of temperature regulation and wish to state that we have found same very satisfactory.

In the past, we were obliged to have someone in our different departments open and close steam valves, so as to keep an even temperature. Your system of temperature regulation does away with all this trouble and after the regulator is set, no further care is necessary. We have found the regulators in our whole plant to work very satisfactory. We have also found that it creates quite a saving in steam, which is a very important item in a mill of this size.

In connection with this, would state that our saving this last winter up to the time we closed our main valves was a little over $5,000.00. This period covers from last Fall until a few weeks' ago. This, therefore, shows that your apparatus has more than paid for itself and has kept an even temperature in the different departments.

Very truly yours,

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Gen. Mgr.

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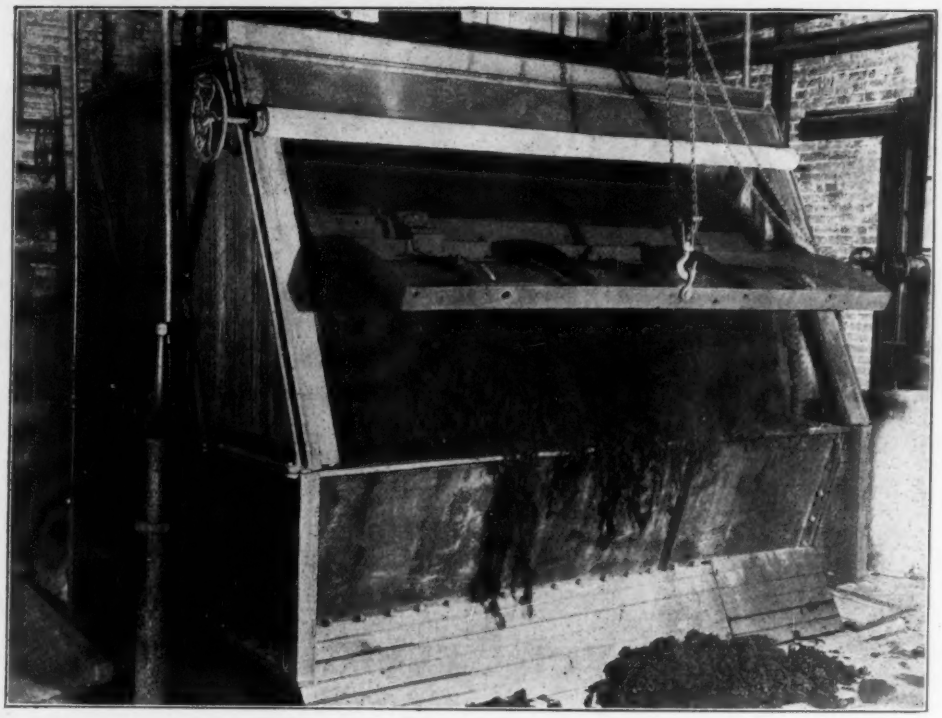

"The finest machine I have ever seen for our work"

This is the way that the boss of the dye-house in the John Williams Mfg. Company's plant, Philadelphia, summed up his opinion of the Klauder-Weldon Raw Stock Machine.

The construction of this machine insures level, even dyeing—penetration. The loading and unloading is very easy. Due to simplified construction there is practically nothing to get out of order. There are four compartments having a combined capacity of from 700 to 1600 pounds per loading—but no matter what the load, the penetration is made in the same thorough manner.

Plant of John Williams Mfg. Company, Philadelphia.

The machine shown is the non-submerged type. Both this and the submerged type are fully described in our Bulletin featuring K-W Raw Stock Machines. Your copy will be sent promptly.

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PURITY and UNIFORMITY are secured by accurate laboratory tests.

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Twenty years of actual service has established Diastafor permanently, as the direct route to better sizing, stripping and finishing. Evidenced by the fact that this agent has eliminated the uncertainty of rambling processes of desizing. Today hundreds of mill men rely upon its dependability and uniformity of results.

They also rely upon the thoroughness of its work. It strips the warp sizing efficiently and prepares the fabric for dyeing, assuring excellent color results.

What more could be asked of a desizing agent?

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Diastafor is sold in fifty pound cans and fifty gallon barrels. Warehouses located at convenient points are at your service. Shipments can be made promptly as you need them.

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THE SCIENTIFIC DESIZING AGENT

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Shorten your operations and level your shades with Hydroxy Oils

Hydroxy Three Fibre Boil Off Oil

Use it on hosiery and fabrics made of three fibres—Art Silk, Pure Silk and Cotton. It is everywhere approved. Keeps in suspension the gum from Pure Silk and the oils on Art Silk.

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A Logical Proposition

for logical textile business men

THE aim of all industries is profits.

But what price profits?

To revise the word in terms of dyeing, what shall it profit a man to use old-fashion, time-consuming methods, that produce low quality goods?

How much of his original profit remains after deducting the wages of surplus hands—and losing the good will of his customers by delinquency in filling orders?

Autogyp is shipped in air tight and water tight Iron Drums of heavy gauge metal, with non-corrosive lining. Net weight, 300 lbs. For express shipments and demonstrations, a smaller type of drum with a net weight of 100 lbs. is used.

The AUTO GYP PROCESS OF BLEACHING AND DYEING is uncompromising—and immediate. It bleaches and dyes in ONE operation—requiring only 2½ hours, whereas the lime method requires 8 to 10 hours. And only HALF the number of men are necessary to complete the AUTO GYP Process!

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Celanese brand yarn is highly elastic and remarkably durable; and it has unique hygienic qualities. The dyestuffs used for dyeing Celanese brand fabrics give colors that are unusually fast to sun, suds, salt-water and perspiration.

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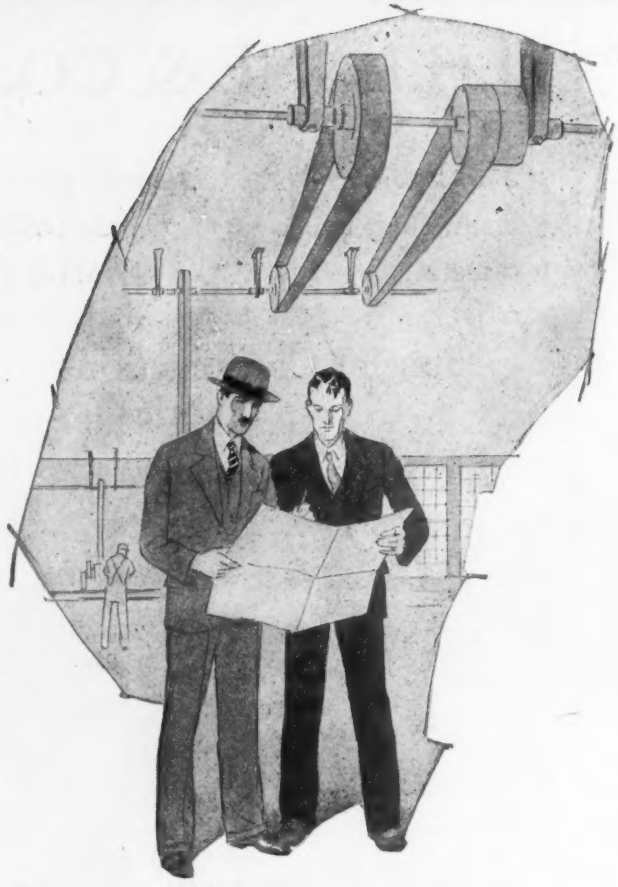

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Shall it be shafting or the installation of individual direct motors? This and other problems of power transmission you solve with scientific and engineering skill. The when, where and how of painting can be effectively planned through the medium of *engineering analysis* and *scientific research*, too!

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Our success is built on the principle of keeping abreast of the progress of the textile field. Our methods of serving you are modern with that backbone of conservatism which has made our success.

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Zinc sulfoxalate for stripping wool and silk.

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A double sulphonated No. 1 castor oil of superior qualities.

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A product of castopole containing correctly blended high boiling solvents for scouring cotton, wool and unions.

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Special oils for special purposes containing 85-75-50% fat acid.

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An efficient addition to the Diazo and Rosanthrene series of diazotisable dyestuffs.

SATISFACTORILY fast to washing . . . splendid solubility . . . brilliant shade . . . great tinctorial power.

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Open or Machine dyeing of all classes of Cotton materials. Viscose and similar Artificial Silks, Silk, and Cotton and Silk Printing.

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The New Textile Leadership

. . . and the PRONOUNCED TREND toward

VAT DYES

1924
1,821,319
pounds
of vat dyes
produced

1925
2,600,000
pounds
43% increase

1926
4,000,000
pounds
53% increase

"THERE is a new leadership," according to *Printers' Ink*, "taking hold in the textile industry, which promises action in 1927."

One significant phase of this new leadership is the common recognition among progressive manufacturers of the growing consumer demand for fast-dyed fabrics. More fast-dyed fabrics are produced today than ever before.

On April 11th, the United States Tariff Commission published a preliminary report on the Census of Dyes which gives the production of vat dyes (excluding Indigo) as 4,000,000 pounds in 1926, as compared with 2,600,000 pounds in 1925—an increase of 53%. Production in 1925 was, in turn, an increase of 43% over the 1924 figure. The consumption of vat dyes in this country has therefore more than doubled in these three years. These are government figures—not the estimate of any individual manufacturer.

"The increase in domestic production (of fast colors) is of interest to every consumer of fabrics," comments this preliminary report, "as indicative of the pronounced trend toward a greater use of fast dyes."

Is your business keyed to this new trend?

E. I. DU PONT DE NEMOURS & CO., Inc.
Dyestuffs Department
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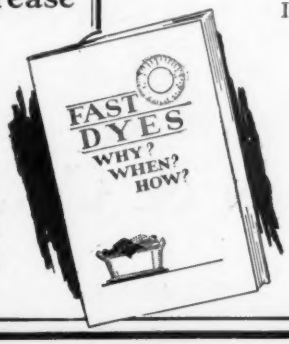

All angles of this important fast color situation are presented in a most vital booklet, "Fast Dyes, Why? When? How?", a copy of which is yours for the asking

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Valuable Data on Single Boils

EARLY in November we shall have ready for distribution a new bulletin on Single Kier Boiling of cotton. This has been prepared by our research staff as one of the series of Cowles Scientific Discussions on Textile Cleaning which have proved so valuable to men engaged in this industry throughout the country.

A copy of this Discussion will be mailed free upon request, also future Discussions as issued. Please write or send coupon.

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Maximum quality and volume of production at minimum cost result from scientific Staley surveys of individual mill conditions and production requirements.

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A processed oil that penetrates and can be instantly stripped in alkalized water at 120° temperature and at negligible cost. Oil never becomes rancid, never oxidizes and silk never becomes sticky.

Use the oil straight, spray, or dip the skeins and whiz. For economy, return exhaust oil from whizzer to dipping tub.

It lubricates, kills static electricity, binds the fibre, strengthens and softens.

It affords perfect winding, twisting, plaiting and knitting, with increased production, less waste and any desired weight.

It prevents elongation in winding and consequently prevents shrinkage in the finishing. *NEUTRAYON is the only oil that does this. If you are interested in a universally satisfactory oil treatment for Artificial Silk, try NEUTRAYON.*

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Every textile man knows that to over-heat cotton fibre in the drying process is to injure it. So—it pays to give the fibre the best treatment possible, and in the drying process this is best done with the Sargent Drying Machine. It has been scientifically proven that its results are perfect. The Sargent dries rapidly, thoroughly and uniformly with a low consumption of power.

Sturdily built. Cast iron frame, automatic feed, ball bearing fans, perfect air circulation, rapid exhaustion—every modern improvement.

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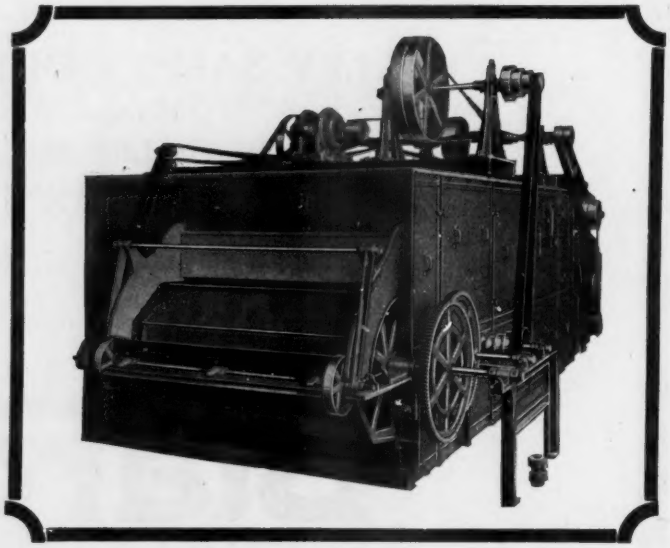

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Oakite Processing Gives Goods Unusual softness of "feel"—Freedom from odors—Uniform dyeing—High quality finish

THERE is only one way to obtain the unusual softness, freedom from odors, excellent finish, and other qualities that identify goods processed the Oakite way. And that is by *using Oakite.*

This powerful detergent *emulsifies* the oils, grease and dirt. Instead of combining chemically with them—as caustics and alkali do—Oakite breaks the oil, for example, up into small minute particles. These particles are then lifted from the fabric and held suspended in solution. This action assures thorough cleaning, and complete, free rinsing. As a result, goods come through unusually soft, with bright lively colors, and with a high quality finish.

Complete instructions on how to use Oakite are given in our booklet "WET FINISHING TEXTILES." Send for a copy.

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**Stocks of Oakite materials are carried in these cities.*

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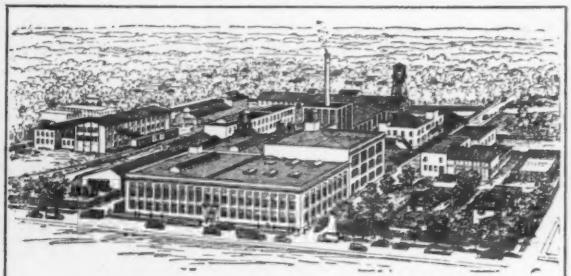

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In every concentration

BOIL-OFF OIL

To clean up and increase lustre of rayon and cotton fancies

BLEACHING OIL

Efficient assistant for the Caustic kier boil

CREAM SOFTENERS

That give a soft, smooth, "kid glovey" feel

HYDROSULPHITES

For stripping and discharge printing

MONOPOLE OIL

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A special textile oil; double sulphonated and highly concentrated; unequalled for all processes.

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SPECIALIZED TEXTILE CHEMICALS

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CARGALA STARCH
MODIFIED STARCH
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Make Your Warp Size Give Good Results

B & L Bleaching Oil Produces a Foundation for a Pure White on Cotton

DIFFICULTIES in connection with bleaching and dyeing can very often be traced to the slasher room where sizing compounds of questionable composition are used.

To take care of these difficultics use *Victrolyn* a lubricating, penetrating, concentrated assistant that mixes with size uniformly. It displaces everything but starch and water, making possible cleaner and more satisfactory work. Only five pounds of *Victrolyn* are mixed with 300 gallons of size to give these results. Comes in iron drums and 10 gallon cans.

Bosson & Lane

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Atlantic, Mass.

VICTROLYN

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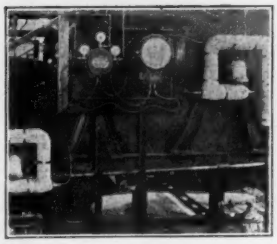
Tycos Automatic Control
ON DRYING CYLINDERS

With the *Tycos* System of differential *temperature* control, the yarn is dried less on the large cylinder than where the same pressure system is used for both cylinders. The smaller cylinder, at a higher temperature, removes the remaining moisture without rupturing the surface coat. This does away with any roughness and decreases shedding. The small cylinder seals the surface coat and produces a smooth and uniformly tough coat with the proper amount of moisture occluded in the yarn itself, all of which is necessary for economic loom production.



Tycos Recorder and Regulator on Drying Cylinders

When *Tycos* has controlled the Slashing Process, the yarn is ready for smooth operation on the looms. It has the correct moisture content for the elasticity so necessary for maximum weaving results. The nbres are tightly bound in for smooth running. The size coating is uniform and tough to prevent wear and chafing. It is pliable to decrease shedding.

This smooth, easy running yarn will enable a weaver to handle more looms, will allow faster running looms, fewer stops and fewer knots in the finished goods.

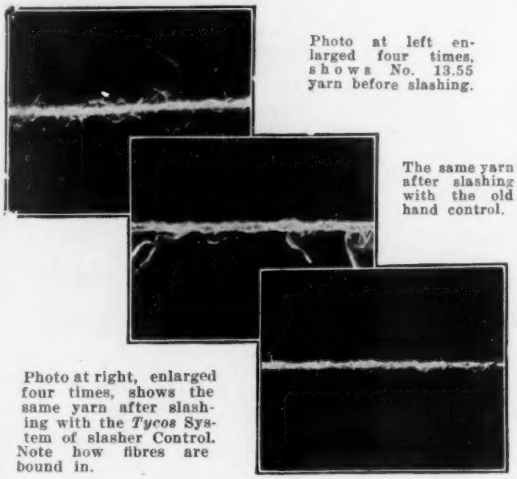


Photo at left enlarged four times, shows No. 13.55 yarn before slashing.

The same yarn after slashing with the old hand control.

Photo at right, enlarged four times, shows the same yarn after slashing with the *Tycos* System of slasher Control. Note how fibres are bound in.

The installation of the *Tycos* System of Slasher Control in many mills, has resulted in increasing the loom production, decreasing the labor cost of weaving, an improved quality of the work, uniform weight of goods and a decrease in the cost of the size mixture.

May we send *complete* information to you?

Taylor Instrument Companies

ROCHESTER, N. Y., U. S. A.

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IN GREAT BRITAIN
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"Nothing's so hard but search will find it out."

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How often the economical, profitable solution of a knotty problem calls for the service of an expert with modern laboratory facilities to aid him!

We pride ourselves on the number of leading mills that have, for years, referred their problems directly to us—problems of every description, related in any way to Stein, Hall Products.

At New York, Long Island City, Charlotte, and Chicago are laboratories virtually *your own.* In each of these a staff of experts stand ready to advise and serve you.

Are you making the most of these facilities?

Serving the Textile Industry with—

"Hawk" Thin Boiling Starch

"Gold Medal" Refined Starch

"Silver Medal" Pearl Starch

"R. A. Brand" Imported Potato Starch

Soluble Wheat Starch Binder

Dextrines and Dry Gums for Printing and Finishing.

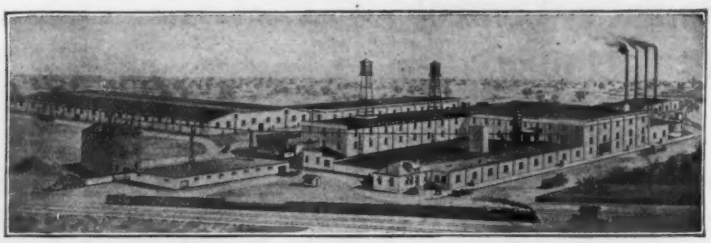
Send for our folder on Raygomm—a recently developed Stein, Hall product for sizing and finishing Rayon and other lustrous materials.

STEIN, HALL & CO., INC.

285 MADISON AVE., NEW YORK

Laboratories at

New York
Long Island City
Chicago
Charlotte



VICTOR MILL STARCH

The Weaver's Friend

It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. DANIEL H. WALLACE, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.

INVESTIGATE

The Advantages of NORWOOD FILTERS

YOU'LL find there are many advantages in Norwood Filters—both in the dependable construction and the economical operation. Norwood Filters will give you Greater Capacity, Greater Durability, Greater Economy and Greater Satisfaction. Ask For Catalog.

Norwood Engineering Company

Florence, Mass.

UCPC

Direct Sulphur Chrome } **Dyes** { **Acid Vat Basic**

Special Shades Matched

VELVETEEN

The Best Boil-off and Finish

Softeners *Oils* *Finishes*

UNITED CHEMICAL PRODUCTS CORPORATION

Importers, Exporters and Manufacturers

York and Colgate Sts. Jersey City, N. J.

Southern Office 307 Commercial National Bank Building Charlotte, N. C.

Chattanooga, Tenn. Chicago, Ill.
Pawtucket, R. I. Columbus, Ga.

Six definite reasons why you should use

Gum Tragasol

1. **A pure vegetable gum.**
2. **Uniformity unquestionable.**
3. **Adds strength to yarn.**
4. **Reduces shedding.**
5. **Reduces seconds caused by loom stoppages.**
6. **Better Production. Better Cloth.**

John P. Marston Company

Importers

247 Atlantic Avenue, Boston

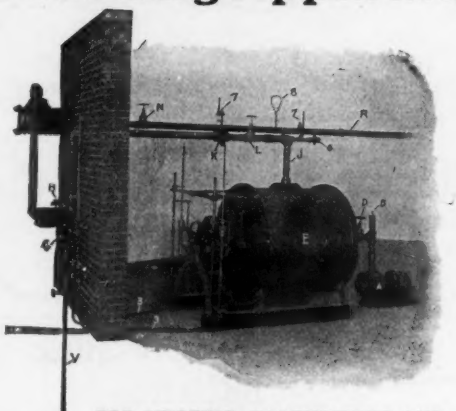
4 Reasons Why You Should Use Quartz Quality

1. Bleaches to swan's down whiteness.
2. Gives permanent dependable results.
3. Saves 20% of oxygen compared with ammonia.
4. Safe for cotton, silk, wool or rayon.

Phila. Quartz Company
Philadelphia

Quartz Quality Silicates of Soda

20th Century Gas Producing Apparatus



FOR SINGEING, CALENDERING AND TENTERING

Used by

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U. S. Finishing Co., Cedartown, Ga.
Southern Bleachery, Greenville, S. C.
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Crystal Spring Bleachery, Chickamauga, Ga.
Thomaston Bleachery Co., Thomaston, Ga.
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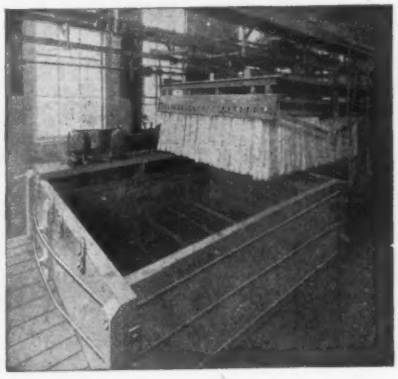
Ware Shoals Bleachery, Ware Shoals, S. C.
Belmont Processing Co., Belmont, S. C.
National Yarn & Processing Co., Rossville, Ga.
and by many others

THE C. M. KEMP MFG. CO.
BALTIMORE, MD.
Southern Representative:
H. G. Mayer, Charlotte, N.C.



Patented

The Last Word In Skein Dyeing

Machines for any size batches from 10 lbs. to 1000 lbs. Of wood, iron or Monel Metal, to suit the requirements.

Motors and silent chain drives, ensure proper circulation and dependable results.

Patentees and Sole Manufacturers Since 1907

HUSSONG DYEING MACHINE COMPANY
GROVEVILLE, NEW JERSEY

SIZING — SEYDEL–WOOLLEY CO. — FINISHING

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SCIENCE versus GUESSWORK

SCIENTIFICALLY PREPARED TEXTILE CHEMICALS

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FINISHING — ATLANTA GA — SIZING

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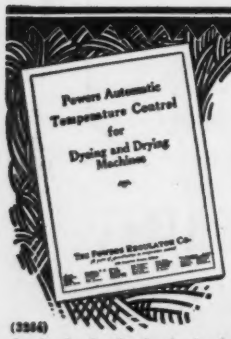
DEEP WELL DRILLING – WATER SUPPLY ENGINEERS

Twenty-five Years Experience in Solving Water Problems

LUITWIELER NON-PULSATING DEEP WELL PUMPS

The Most Efficient Water Supply Equipment Made.

SYDNOR'S SUPREME SERVICE



May we send you a copy of this folder?

No matter how careful your workmen may be in regulating the temperature of your dyeing and drying operations, they occasionally make mistakes which cost you a great deal more than the price of an automatic regulator.

This folder shows how to eliminate losses which occur from overheating of dye liquor and overheated air in dryers. Sent free upon request.

THE POWERS REGULATOR CO.

36 years of specialization in temperature control.

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Also New York, Boston, Atlanta, Toronto, and 32 other offices. See your telephone directory.

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Spinning, Speeder and Mule Rolls

Renecked, Refluted and Honed

Sole Patentee and User of
George A. Bates Patented Flute Raising Machine, for raising worn out Drawing Rolls or Comber Detaching Rolls

Guaranteed not to change diameter of roll

George A. Bates & Son

Established 1893

Quality and Service

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RODNEY HUNT

Textile Wet Finishing Machinery

Water Power Equipment

Rolls—Wood, Metal, Rubber

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Liquid E B G Chlorine

The service is equal to the product.
In 100 and 150 pound Cylinders, Ton Drums, and Tank Cars.

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Plant: NIAGARA FALLS, N.Y.

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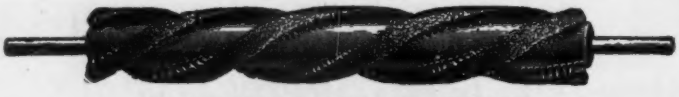

MASON BRUSH WORKS

WORCESTER, MASS.

MILL and MACHINE BRUSHES

Cotton, Woolen and Silk
Made and Repaired

RUGGED CONSTRUCTION SERVICEABLE

"COLUMBUS TAPE"

GEORGIA WEBBING & TAPE CO. COLUMBUS, GA.

How to Dry Warps

So That Threads Are Round, Soft and Flexible

THE Continuous "HURRICANE" Loop Dryer, in which the warps are hung in loops over poles moving slowly through a current of warm air, are recommended for drying warps. The threads are round, soft, and flexible. There is no danger of overheating or altering delicate colors.

Other Products Include:

DRYERS

Cotton stock, Wool and Rags, Skeins, Warps, Piece Goods, Underwear, Hosiery, Toweling, Plush, Hosiery Drying Forms

VACUUM EXTRACTORS
CONDITIONING MACHINES
CARBONIZING EQUIPMENT

Send your drying problems to

THE PHILADELPHIA DRYING MACHINERY CO.
Stokley St. above Westmoreland, Phila., Pa.
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HURRICANE Loop Dryer

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Amalie WARP-PRODUCTS

Many years of highly satisfactory service in Colored and White Goods Cotton Mills—

Their endorsement by leading bleacheries, and mill sales agents—

Such vital facts prove the genuine merit and the never-failing dependability of—

Amalie WARP-PRODUCTS

L. SONNEBORN SONS, Inc.
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Manufacturing Chemists for the Textile Industry

Sales Offices in leading Textile Centers

L. SONNEBORN SONS, INC., NEW YORK, N.Y.

DOUGLAS CROWN STARCH

A THIN boiling starch made especially for the textile trade.

Preferred because of its high, uniform quality. Every shipment the same. Produces a uniform size and finish.

Eliminates changes in formula for size mixture.

A starch that makes satisfied customers.

Our service department and research laboratory will gladly assist in your sizing any finishing problems.

We manufacture Pearl, Powdered and other standard grade starches of the highest quality.

Penick & Ford, Ltd., Inc.
Manufacturers
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Southern Representatives:
G. L. Morrison, Spartanburg, S. C.
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Marble Nye Company, Boston and Worcester, Mass.
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Modern Methods

The metallurgist is able with the microscope to examine the most intimate structure of steel and to determine the causes of success or failure.

So too the microscope reveals the superior condition of textile fibres treated with the

Wyandotte Quality and Service *Textile Alkalies*

The long straight fibres of undiminished tensile strength explains further why fibres so treated spin down finer and produce a finished product of superior appearance and texture.

Hundreds of mills are benefiting from the use of these special purpose alkalies. It is logical to claim they can do as much for you.

Ask your supply man for "WYANDOTTE"

THE J. B. FORD CO., Sole Mfrs.
WYANDOTTE, MICHIGAN

REEDS (All Types)

HEDDLES (Imported and Domestic)

(For Cotton, Woolen, Silk, Rayon and All Other Fabrics)

HEDDLE FRAMES

SLASHER COMBS

SAMPLES GLADLY SUBMITTED ON REQUEST

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Manufacturers of the Highest Quality Weaving Accessories for **over half a century**

WALKER MANUFACTURING CO., Inc.,

Established 1875

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Laurel Brand
PURITY PRODUCTS

LAUREL TEXTILE OIL

A thoroughly sulphonated castor oil product used in the dyebath for complete penetration and level dyeing, producing lustre and perfect handle. Recommended as softener after dyeing; for wetting out before dyeing and as a kier assistant.

A trial will convince you.

Manufactured by

LAUREL SOAP MFG. CO.

Incorporated

WM. H. BERTOLET & SONS
Tioga, Thompson & Almond Streets
Philadelphia, Pa.

Warren Soaps

Preferred Stock

The best quality tallow, palm, and red oils and olive foots, carefully balanced with the purest chemicals for your special purpose.

Uniformity guaranteed by test before shipment.

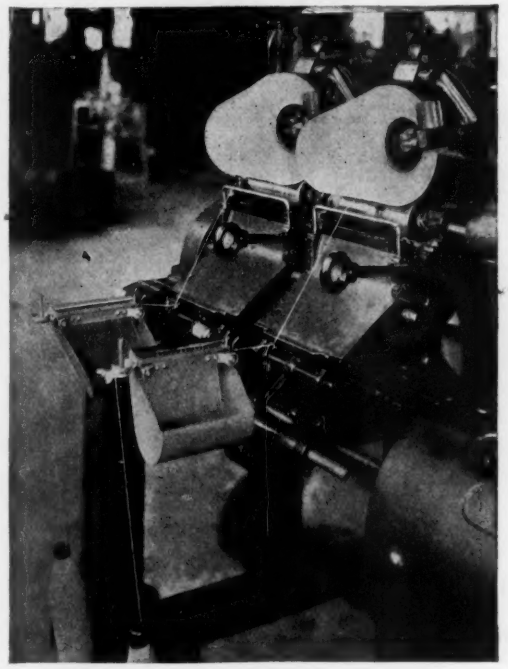
Warren Soap *Warren Service*

Warren Soap Mfg. Co.

Established 1870

77 Summer St. Boston, Mass.

Incorporated 1890



Both Are Necessary

There have been many attempts made to invent a practical yarn cleaning device.

The great difficulty has been in securing a mechanical apparatus that would thoroughly clean without injuring the yarn, and at the same time work day in and day out without any attention. Both of these requirements are absolutely necessary—either one by itself is of no value.

Both have been incorporated in the

ECLIPSE
AUTOMATIC
YARN CLEANER

What It Is—

It is a small, compact device by which yarn is thoroughly cleaned by an entirely new principle. ***Flexible*** blades, vibrating ***onstantly*** remove dirt, sand, slugs, bunches and other foreign matter, without affecting in the slightest the strength and elasticity of the yarn. The Eclipse Yarn Cleaner is easily attached to any make Winder or Spooler.

ECLIPSE TEXTILE DEVICES, Inc.

Elmira, N. Y.

Makers of—Ball Bearing Bobbin Holder, Automatic Yarn Cleaner, Eclipse Van Ness Dyeing Machine.

Cut Your Beam Head Costs by *Two-Thirds*

Our files are literally crowded with evidence that one Apco-Mossberg Steel Beam Head outlasts three of the old-fashioned cast iron type.

Made of special drawn steel, Apco-Mossberg Beam Heads stop losses caused by delayed production and do away with the expense of rewinding yarn.

Let us show you how Apco-Mossberg Steel Beam Heads can save you money. Write us about your needs. No obligation involved.

APCO-MOSSBERG CORP.

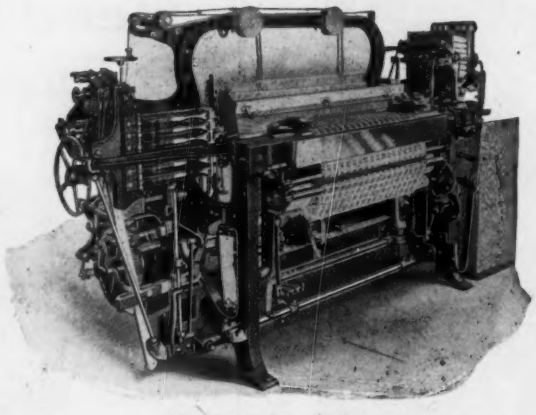
Originators and Expert Manufacturers of Steel Beam Heads

15 Lamb St.,

Attleboro, Mass.

GINGHAMS

ARE BEST MADE ON AUTOMATIC BOX LOOMS



BUILT BY

CROMPTON & KNOWLES LOOM WORKS

WORCESTER, MASS.

PROVIDENCE, R.I. PHILADELPHIA, PA. ALLENTOWN, PA. PATERSON, N.J.

S. B. ALEXANDER, Southern Manager, Charlotte, N. C.

"NO WASTE"

THE STANDARD MILL RECEPTACLES OF THE TEXTILE INDUSTRY

Style MT Seamless Roving Can

Style S-AF Vulcanized Fibre Car

Steel Clad Floor Box

Write for Catalog

STANDARD FIBRE CO.

Kennett Square, Pa.

Citizen's Nat'l Bank Bldg., Gastonia, N. C.

Solid

It's a gruelling job at best—that of the picker stick. None know it better than the makers of Pioneer Brand Picker Sticks. Accurately designed, carefully worked, these hickory sticks take the hard knocks with unfaltering stride.

THE PIONEER POLE & SHAFT CO.

Manufacturers of Hickory Products for over 40 years.

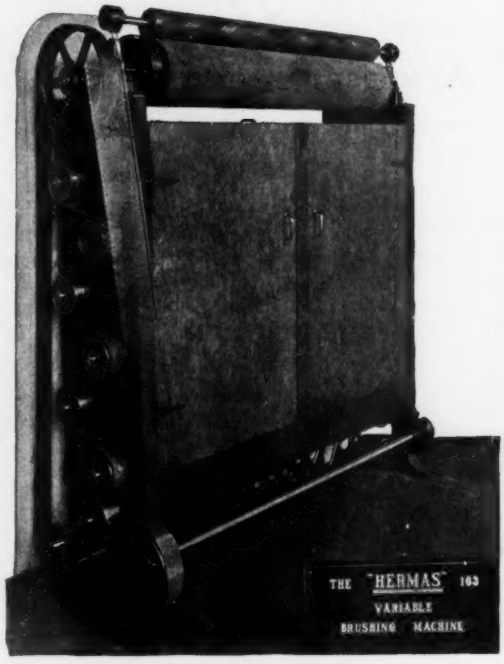
Memphis, Tenn.

"Pioneer" Picker Sticks

HERMAS

New Patented Vertical Brushing Machine

REMOVES
LEAF, MOTES, SOFT
BUNCHES, ETC. FROM SHEETINGS,
TOWELLING, PRINT CLOTH,
ETC.



Saves bleaching to remove leaf, etc. Thoroughly cleans the cloth without raising nap or shifting filling.

Ball bearing throughout and built with any combination of fibre or wire brushes and sand rollers.

Has individual suction on each brush and is self cleaning.

Stands only 24" from front to rear; 7' high and in all standard widths.

Hermas Machine Company
Hawthorne, N. J.
Warburton Ave. **Susquehanna, R. R.**

HERMAS

You Buy Looms
From a Loom Builder

To get the best results you should

Buy Shuttles
from a
Shuttle Maker

No Looms
No Reeds
No Spools
No Bobbins
No Harness

Just Shuttles

SHAMBOW
Shuttles Exclusively
SHUTTLE - COMPANY
H. H. Ullman, President
WOONSOCKET, R.I.
GREENVILLE, S.C. PATERSON, N.J.

Use Acme Products

Save Time and Labor

This Acme Handstitch Staple Binding Machine is used in attaching small tags to clothing, wearing apparel, rugs, carpets and all kinds of merchandise without mutilating the fabric. Made of light weight metal (weight 36 oz.) and can be carried from one pile of merchandise to another.

We also make many special models for different uses; such as Staple Binders for fastening envelopes, letters, invoices and other documents. They work accurately, quickly and faultlessly and save time, labor and trouble.

THE ACME STAPLE BINDER is the only Staple Binding Machine Designed, Manufactured and Distributed from its own factory.

We guarantee our Products—Send for Catalogue

ACME STAPLE CO., Camden, N. J.

Since 1888 reliable humidifying devices.

American Moistening Co.

Factory and Executive Offices:
Providence, R. I.

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Georgia

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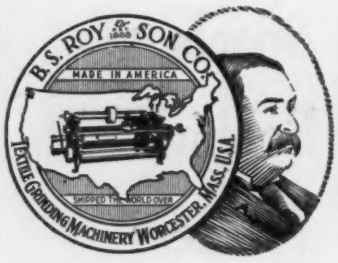

In 1868, B. S. Roy, overseer of carding, Rockville, Conn., realizing the need of a card grinder which would do accurate work and stand up under hard usage, invented the original card grinding machine which resulted in revolutionizing card grinding completely.

Keep your cards ground for efficient service and your stock will be carded properly. For real efficiency and minimum production costs your grinding equipment must run absolutely true. If your present equipment needs readjustment, send it to us and we will put it in proper shape.

Whatever your card grinding problems, you are always welcome to the service of our engineers.

B·S·Roy & Son Co.
ESTABLISHED 1868
Textile Grinding Machinery
Worcester, Mass., U.S.A.

Its High Quality Never Varies

The outstanding feature for which Amtex Spinning Tapes are known is UNIFORMITY. This uniformity will not be altered until BETTER tapes can be made. Whenever this step is made those ADDED years of progressive experience will be applied in the same scientific manner as those pioneers years were applied to the present foremost quality.

Ask for prices today.

Manufactured by
AMERICAN TEXTILE BANDING CO.,
INCORPORATED
Germantown, Phila., Pa.

AMTEX
TRADE MARK REGISTERED

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B. L. PLOWDEN
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JAS. G. PLOWDEN
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AMTEX
SPINNING, TWISTING and SPOOLING TAPES

"Whole Cloth" versus *Real Cloth* Records

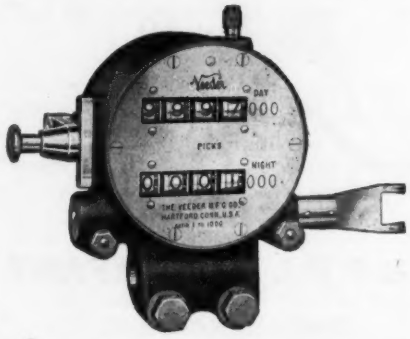
Paying operatives for their *estimated* output is buying goods "sight unseen." You'll often pay by production-reports made of "whole cloth" rather than real cloth.

The one place, for sure, where you *see* what you're getting in measured production is on the dial of a Veeder Counter.

No padded piecework reports register there; no fooling by the day-rate worker who always "looks" to be busy. Each cut you pay for (in wages to weavers) is vouched for as *value received* by a

Veeder COUNTER

Below is shown the Duplex Loom Pick Counter, which embodies *two* regular Veeder Pick Counter mechanisms in a single case, for two-shift operations.



The double dial indicates separately the output of day and night operators. When running two-shifts, you need take readings but *once a week*—same as when using a single counter on the one-shift plan. Saves clerical work and confusion. Furnished with side drive or vertical drive with gear box, to be driven by worm gear from the loom crankshaft.

Write for textile counter booklet showing the "Duplex" and many other specialized textile counters.

The Veeder Mfg. Co.

6 Sargeant St., Hartford, Conn.

Southern Representatives:

Carolina Specialty Co., Charlotte, N. C.

E. E. Lovern, Newnan, Ga.

Save by Spending

DIAMOND FINISH

That Diamond Finish Rings are more economical in the long run is proven by the number of repeat orders that we have received for the last fifty years.

* * *

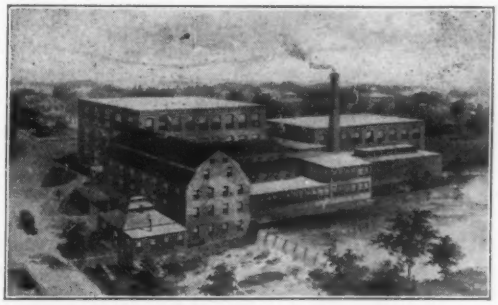
Let's do business.
It will afford you great economy.

* * *

Whitinsville Spinning Ring Co.

Whitinsville, Mass.

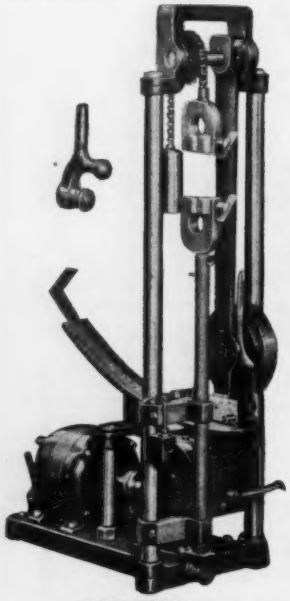
Ring Specialists Since 1873



ALFRED SUTER

Textile Engineer

200 Fifth Avenue New York



DIMENSIONS:
HEIGHT 36 in.
WIDTH 12 in.
DEPTH 18 in.

Specialist in Testing Equipment for Yarn and Cloth

THIS ILLUSTRATES OUR NEW PRECISION YARN AND CLOTH TESTER WITH MOTOR DRIVE.

THE LAST WORD IN ACCURACY and UP TO DATENESS.

Ask for Special Pamphlet

Southern Representative

STANDARD CHEMICAL CO.
Charlotte, N. C.

Repeat Orders Prove

the 100% satisfaction of the

"Centrif-Air"

Adjustable Cotton Cleaning System

Its Advantages are:

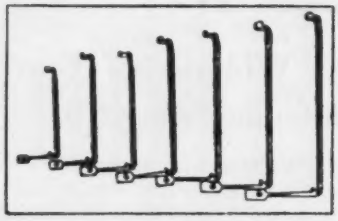
1—It Removes More Light Leaf and Shale From Cotton Than Any Other Cleaner.

2—It Has A Lower Operating Fire Hazard Than Any Other Cleaner In The World.

3—It Reduces the Operating Fire Hazard of All Machines That Follow It.

The Centrif-Air Machine Co., Inc.
Atlanta Georgia

A Good Reputation



Doesn't just happen—It must grow with the years

S. S. F. Co.'s reputation for quality and value is the result of more than a quarter-century of honest workmanship and the use of the best materials to produce the finest Flyer Pressers. S. S. F. Co.'s Flyer Pressers conform to a standard of service which is never relaxed. That's why they are the best known to the Textile industry.

"Quality Features Built-in, Not Talked-in"

Southern Spindle & Flyer Co., Inc.
Charlotte, N. C.

We Manufacture, Overhaul and Repair Cotton Mill Machinery.

W. H. MONTY, Pres. and Treas.
W. H. HUTCHINS, V.-Pres and Sec.

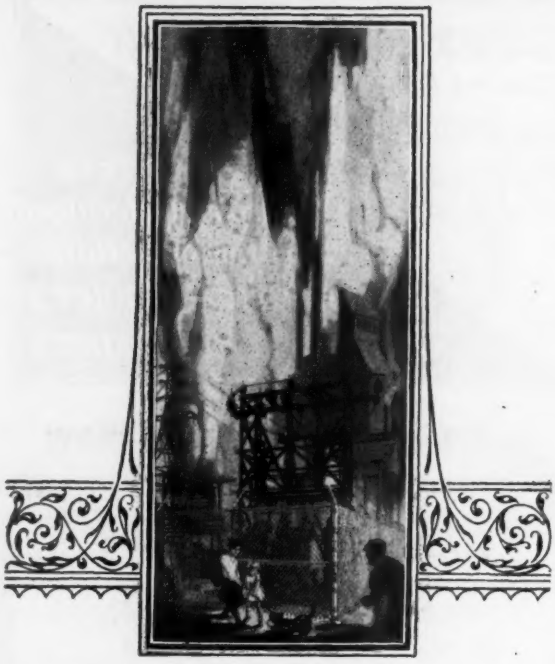
AMERICAN SUPPLY COMPANY

PROVIDENCE, R. I.

Manufacturers of

LOOM HARNESS,
WEAVING REEDS,
OAK TANNED LEATHER
BELTING, STRAPPING,
ETC.

We make a specialty of Harness for Warp Drawing Machines



LAST CALL!

Fence Your Property Before Winter

These crisp mornings offer a timely suggestion to industrial executives: Fence before winter—before the ground freezes and installation costs mount. Protect your property against losses from the increased theft and vandalism during winter months.

Frequently, Cyclone engineers, in analyzing fence requirements make recommendations for economy which completely offset the cost of the fence and far outweigh any price consideration. Write nearest offices. *We erect fence anywhere.*

CYCLONE FENCE COMPANY

Main Offices: Waukegan, Ill.

WORKS AND OFFICES:
North Chicago Ill., Cleveland, Ohio
Newark, N. J., Fort Worth, Texas
Direct Factory Branches in All Principal Cities
PACIFIC COAST DISTRIBUTORS:
Standard Fence Co., Oakland, Calif.
Northwest Fence & Wire Works, Portland, Ore.

Cyclone Fence
REG. U.S. PAT. OFF.

The Mark of Dependable Property Protection

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WISSCO PERFORMANCE TELLS THE STORY

WICKWIRE SPENCER STEEL CO.

Two Years on Wool Without Grinding

We would be justified in saying many extravagant things about the superiority of Wissco Card Clothing but we prefer to let WISSCO PERFORMANCE tell the story.

A mill in Connecticut has been running a Wissco cylinder on wool two years. It has not been ground yet.

A mill in Providence, R. I., has been running a Wissco cylinder on wool for more than a year without grinding. Ordinarily clothing is ground every four to six weeks for wool work.

A mill in Warwick, R. I., has been operating one of two Wissco cylinders on cotton for five months without grinding. The other cylinder was touched up lightly at the end of four months. This was done only because the card had been moved and it was thought advisable, in order to get proper alignment, to touch up all the clothing on it. This same concern is running Wissco cylinders in their Providence mills. They omit every other grinding.

Identical conditions are found in a Maine plant, where Wissco cylinders are used on cotton.

Names of these concerns or other information will gladly be furnished upon request.

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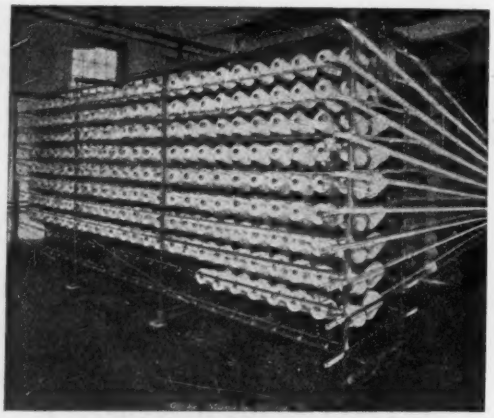

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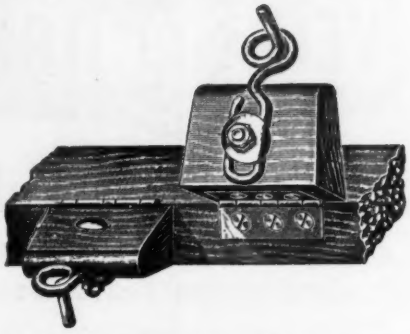

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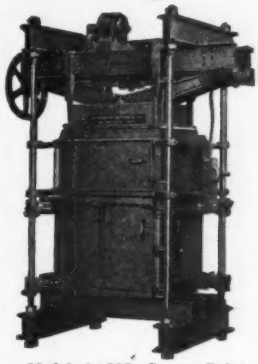

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CENTRIFUGAL PUMPS.
(See Pumps.)

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(See Belting—Chain Link.)

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Link Belt Co.
Morse Chain Co.

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(See Furniture.)

CHAIRS (THEATRE.)
(See Theatre Supplies and Equipment.)

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Charlotte Leather Belting Co.
Graton & Knight Mfg. Co.

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(See Dyestuffs and Chemicals.)

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Electro Bleaching Gas Co.
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Oakite Product, Inc.

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Centrif-Air Machine Co.

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(See Counters.)

CLOCKS—WATCHMAN.
Detex Watchclock Corp.

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(See Toilets.)

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Hermas Machine Co.
Wildman Mfg. Co.

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Textile Finishing Mchry. Co.
Wildman Mfg. Co.

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Reliance Machine Works.
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Carlyle-Johnson Mch. Co.

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Morse Chain Co.

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(See Disinfectants.)

COCKS.
(See Valves.)

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Wood's Sons Co., T. B.

COMB APRONS.
((See Aprons.)

COMB—SLASHER.
(See Slasher Equipment.)

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Halton's Sons, Thomas.
U. S. Bobbin & Shuttle Co.
Whitin Machine Wks.

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General Electric Co.

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(See Brushes—Motor & Generator.)

COMPUTING SCALES.
(See Scales.)

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Ryerson & Son, Inc., Jos. T.

CONCRETE REINFORCING STEEL.
Ryerson & Son, Inc., Jos. T.

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Westinghouse Elec. & Mfg. Co.

CONDENSERS (ROTARY).
Centrif-Air Machine Co. Inc.

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Appleton Electric Co.
Erie Malleable Iron Co.

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Sonoco Products Co.

CONE WINDING MACHINE.
(See Winding Machinery.)

CONNECTORS—FRANKEL, SOLDERLESS.
Westinghouse Elec. & Mfg. Co.

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Ernst & Ernst.
Loper & Co., Ralph E.

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(See Architects and Engineers)

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Robert & Co.
Sirrine & Co., J. E.

CONTRACTORS—ELECTRICAL.
(See Electrical Engineers.)

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General Electric Co.
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Powers Regulator Co.
Taylor Instrument Co.

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Centrif-Air Machine Co. Inc.
Link-Belt Co.
Morse Chain Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
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Morse Chain Co.

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(See Humidifying Apparatus.)

COOLERS—WATER.
(See Water Coolers).

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American Moistening Co.
Carrier Engineering Corp.
Johnson Service Co.
Parks-Cramer Co.

COOLING TOWERS.
(See Tanks and Towers.)

COPPER STAMPS AND STENCILS.
(See Stamps, Stencils, etc.)

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Saco-Lowell Shops.
Textile Finishing Machinery Co., The.

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Mundet & Son, Inc., L.

CORK COVERED ROLLS.
Armstrong Cork & Insulation Co.

CORK INSULATION.
Armstrong Cork & Insulation Co.
Mundet & Son, Inc., L.

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Eastwood, Benjamin.

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Textile Banking Co.

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Irving Iron Works.
Ryerson & Co., Inc., Jos. T.

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Loper & Co., Ralph E.

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Bancroft & Sons Co., Joseph.
Callaway Mills.
Fawcett, Hughes.
Hunter Mfg. & Commission Co.
Lane & Co., J. H.
Weimar Bros.
Woodward, Baldwin & Co.
Yarns Corp. of America.

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Atlanta Harness & Reed Mfg. Co.
American Machine Co.
Atwood Machine Co.
Barber-Colman Co.
Barber Mfg. Co.
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Butterworth & Sons, H. W.
Centrif-Air Machine Co.
Cooper Co., Chas.
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Draper Corporation.
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Eclipse Textile Devices, Inc.
Fales & Jenks Mch. Co.
Fletcher Works.
Halton's Sons, Thomas.
Howard Bros. Mfg. Co.
Howard & Bullough.
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Lambeth Rope Corp.
Lestershire Spool Mfg. Co.
Litchfield Shuttle Co.
Mason Brush Works.
Page-Madden Co., Inc.
Palmer Co., I. E.
Parker Co., Walter L.
Phila. Drying Mchry. Co.
Pioneer Pole & Shaft Co.
Platt Freres.
Proctor & Schwartz, Inc.
Root Co.
Roy & Son, B. S.
Sargents' Sons Corp., C. G.
Saco-Lowell Shops.
Schaum & Uhlinger.
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Stafford Co.
Standard Fibre Co.
Southern Loom Reed Mfg. Co.
Southern Spindle & Flyer Co.
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Textile Finishing Machinery Co.
Tolhurst Mch. Wks.
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Wickwire-Spencer Steel Co.
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Schaum & Uhlinger.

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Valley Mills.

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Veader Mfg. Co.

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Wood's Sons Co., T. B.

COUPLING—SHAFT.
Dodge Mfg. Co.
Wood Sons Co., T. B.

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Mundet & Son, Inc., L.

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Link Belt Co.
Ryerson & Son, Inc., Jos. T.

CRANES—HAND POWER.
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Carolina Metal Culvert Co.

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(See Cloth Cutters.)

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(See Thread Cutters.)

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(See Boxes—Packing.)

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Lupton's Sons Co., David.

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Cowles Detergent Co.
Oakite Products, Inc.

DEXTRINES.
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DIAL SCALES.
(See Scales.)

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DIE STOCKS.
(See Pipe Threaders.)

DIESEL ENGINES.
(See Engines—Diesel.)

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Crompton & Knowles Loom Wks.
Whitin Machine Works.

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(See Boxes—Mill.)

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DOFFING CANS.
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Lupton's Sons Co., David.

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(See Culvert.)

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Saco-Lowell Shops.
Whitin Machine Works.
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Independent Pneumatic Mchry. Co.
Ryerson & Son, Inc., Jos. T.
Westinghouse Electric & Mfg. Co.

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(See Fountains—Drinking.)

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Draper Corp.
Steel Heddle Mfg. Co.

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American Moistening Co.
Carrier Engineering Corp.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.

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American Moistening Co.
Butterworth, H. W., & Sons Co.
Gaston County Dyeing Machine Co.
Globe Mfg. Co.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
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Tolhurst Machine Works.

DUST COLLECTORS.
(See Blowers and Blowing Systems.)

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Proctor & Schwartz, Inc.

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Aberfoyle Mfg. Co.
American Yarn & Processing Co.
Bancroft & Sons Co., Joseph.
Dixie Mercerizing Co.
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Southern Mercerizing Co.
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Briggs-Shaffner Co.
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Chattanooga Brazing & Welding Co.
Firsching, J. A.
Fletcher Works.
Franklin Process Co.
Gaston County Dyeing Machine Co.
Globe Mfg. Co.
Hussong Dyeing Machine Co.
Hunt Machine Co., Rodney.
Johnson, Chas. B.
Kemp Mfg. Co., C. M.
Page-Madden Co., Inc.
Pendleton Mfg. Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Schaum & Uhlinger.
Textile Finishing Machinery Co., The.
Tolhurst Machine Works.

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Gaston County Dyeing Machine Co.

DYE NETS.
Pendelton Mfg. Co.

DYE STICKS.
Phila. Drying Machinery Co.

DYE VATS AND TUBS.
(See Tanks and Bleaching Kiers.)

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Berne, Seryusser Co.
Bosson & Lane.
Burkhart-Schiee Chemical Co.
DuPont de Nemours & Co., E. I.
Ciba Co., Inc.
Electro Bleaching Gas Co.
Fernald-Jenkins, Inc.
Fleischmann Co., The.
Ford Co., J. B.
General Dyestuff Corp.
Kali Mfg. Co.
Laurel Soap Mfg. Co.
Marston Co., John P.
Mathieson Alkali Wks., Inc.
National Aniline & Chemical Co.
Newport Chemical Wks.
Oakite Products, Inc.
Panick & Ford Sales Co., Inc.
Philadelphia Quartz Co.
Rohm & Haas.
Roessler & Hasslacher Chem. Co.
Seydel-Woolley Co.
Sonneborn Sons, Inc., L.
Staley Mfg. Co.
Surpass Chemical Co.
United Chemical Products Corp.
Wolf & Co., Jacques.

ELECTRICAL CONDUIT AND FITTINGS.
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ELECTRIC DYNAMOS AND MOTORS.
(See Motor and Generators.)

ELECTRIC FANS.
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ELECTRIC LAMPS.
(See Lamps.)

ELECTRIC LIGHTING ENGINEERS.
(See Illuminating Engineers.)

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Fairbanks-Morse & Co., Inc.
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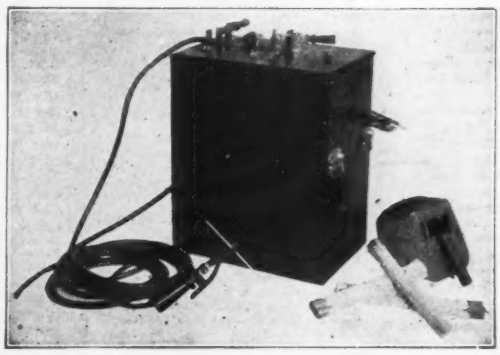

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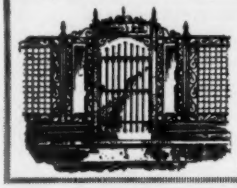

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Morse Chain Co.

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Page-Madden Co., Inc.

ENAMEL MILL WHITE.
(See Paint.)

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Fairbanks-Morse & Co.

ENGINES—OIL, GAS, KEROSENE AND GASOLINE.
Allis-Chalmers Mfg. Co.
Fairbanks-Morse & Co., Inc.

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Allis-Chalmers Mfg. Co.
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Toomey, Frank.
Westinghouse Elec. & Mfg. Co.

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Irving Iron Works.
Jenkins Bros.
Taylor Instrument Co.
Westinghouse Elec. & Mfg.

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Chittick, James.
Ernst & Ernst.
Loper & Co., Ralph E.

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Chittick, James.

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American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

EXTRACTORS—VACUUM.
Phila. Drying Mchry Co.

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FACTORY MANAGEMENT. SYSTEMS.
Ernst & Ernst.
Loper & Co., Ralph.

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Carrier Engineering Corp.
Carter Electric Co.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

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FEED WATER PURIFIERS.
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Proctor & Schwartz, Inc.

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Anchor Post Fence Co.
Cyclone Fence Co.

FENCE POSTS—CREOSOTED PINE.
Southern Wood Preserving Co.

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Standard Fibre Co.

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Howard Bros. Mfg. Co.

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W. S. Bobbin & Shuttle Co.

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Norwood Engineering Co.

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(See Dyeing, Bleaching and Finishing Machinery.)

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Cowles Detergent Co.
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Laurel Soap Mfg. Co., Inc.
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Oakite Products, Inc.
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Philadelphia Quartz Co.
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Stodghill & Co.
United Chemical Products Corp.
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Truscon Steel Co.

FIRE HOSE.
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FIRE PROTECTING PAINT.
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Crane Co.

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FLOOR SCRUBBING POWDERS.
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FLOOR SWEEPS.
(See Brushes.)

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Howard & Bullough.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

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FORMS—HOSIERY DRYING.
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Lombard Fdry. & Mch. Wks.

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Crane Co.
Rundle-Spence Mfg. Co.

FRICTION CLUTCHES.
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Hofman, Alfred, Inc.
Textile Machine Works.

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Butterworth & Sons Co., H. W.
Proctor & Schwartz, Inc.

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Roy & Sons Co., B. S.

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Kemp Mfg. Co., C. M.

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Ferguson Gear Co.

GEARS (BEVEL, SPIRAL, WORM.)
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Page-Madden Co., Inc.

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Fisher Governor Co.
General Electric Co.

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Skybryte Co.

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Mississippi Wire Glass Co.

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Ernst & Ernst.
Loper & Co., Ralph E.

GRAPHITE.
Dixon Crucible Co., Jos.

GRATES—BOILER.
Lombard Fdy. & Mch. Co.

GRATES—MECHANICAL.
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GREASE CUPS.
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GRINDERS AND BUFFERS—ELECTRIC.
Independent Pneumatic Tool Co.

GRINDERS—CARD, CALENDER ROLL, NAPPER AND GARNET.
(See Card Grinding Machinery.)

GUARDS—ELECTRIC LAMP.
(See Electric Lamp Guards.)

GUDGEON ROLLS.
Washburn.

GUIDES—THREAD.
(See Thread Guides.)

GUMS.
(See Finishing and Sizing Materials.)

HAMPERS—CANVAS.
Valley Mills.

HANGERS.
(See Shafting and Hangers.)

HANK CLOCKS.
(See Counters.)

HARDWOOD FLOORINGS.
(See Flooring).

HARNESS—LOOM.
(See Loom Harness.)

HEADS—BOBBIN AND SPOOL.
(See Bobbin Heads.)

HEATING AND VENTILATING APPARATUS.
(See Ventilating Apparatus.)

HEDDLES.
Crompton & Knowles Loom Works.
Draper Corporation.
Howard Bros. Mfg. Co.
Steel Heddle Mfg. Co.
Walker Mfg. Co.

HEDDLE FRAMES.
Crompton & Knowles Loom Works.
Steel Heddle Mfg. Co.
Walker Mfg. Co.

HOISTS—CHAIN.
Chisholm-Moore Mfg. Co.
Fairbanks-Morse & Co.
Link-Belt Company.
Ryerson & Son, Inc., Jos. T.

HOISTS—ELECTRIC.
Chisholm-Moore Mfg. Co.
Fairbanks-Morse & Co.
Independent Pneumatic Tool Co.
Link Belt Co.
Ryerson & Son, Inc., Jos. T.

HOISTS—GATE.
Hunt Machine Co., Rodney.

HOPPER FEEDERS.
(See Automatic Feeders.)

HOSE (RUBBER.)
Goodyear Tire & Rubber Co.

HOSIERY DYEING MACHINERY.
Butterworth & Sons Co., H. W.
Chattanooga Brazing & Welding Co.
Franklin Process Co.
Philadelphia Drying Mchry. Co.

HOSIERY DRYING FORMS.
Phila. Drying Mchry. Co.

HOSIERY MACHINES.
(See Knitting Machinery.)

HOSIERY YARNS.
(See Yarn Manufacturers.)

HOTELS.
Atlanta Biltmore Hotel.
Hotel Pennsylvania.
Hotel Sinton.
Shelton Hotel

HUMIDIFYING APPARATUS.
American Moistening Co.
Carrier Eng. Corp.
Parks-Cramer Co.

HUMIDIFYING INDICATING INSTRUMENTS.
Bristol Co.
Taylor Instrument Co.

HYDROMETERS.
Taylor Instrument Co.

HYDRAULIC TURBINES.
(See Turbines—Hydraulic.)

HYDRO EXTRACTORS.
(See Extractors.)

HYDROGEN PEROXIDE.
Roessler & Hasslacher Chem. Co.

ILLUMINATING ENGINEERS.
Benjamin Electric Mfg. Co.
Cooper Hewitt Electric Co.

INDICATING AND RECORDING INSTRUMENTS AND THERMOMETERS.
Bristol Co.
General Electric Co.
Root Co.
Taylor Instrument Co.
Westinghouse Elec. & Mfg. Co.

INDIGO.
(See Dyestuffs and Chemicals.)

INDUSTRIAL SITES.
Atlanta Industrial Bureau
Barstow Co., W. P.
Broad River Power Co.
Carolina Power & Light Co.
Columbus Elec. & Power Co.
Georgia Power Co.
Nashville Industrial Corp.
Seaboard Airline Ry.

INK—STENCIL AND MARKING.
Bradley Mfg. Co., A. J.

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Briggs-Shaffner Co.
Herman Machine Co.

INSULATING MATERIAL.
Armstrong Cork & Insulation Co.
Goodyear Tire & Rubber Co.
Mundet & Son, Inc., L.

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Irving Iron Works.
Ryerson & Sons, Inc., Jos. T.

IRON AND STEEL WORK—ORNAMENTAL.
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Cyclone Fence Co.
Dufur & Co.
Irving Iron Works.
Karlow Flooring Co.
Lombard Iron Works & Supply Co.

JACK FRAMES.
Woonsocket Mch. & Press Co.

JACKS (PUMPS.)
Fairbanks-Morse & Co.

JACK SPOOLS.
(See Spools.)

JACQUARDS.
Crompton & Knowles Loom Works.
Halton's Sons, Thomas.

JACQUARD HEDDLES.
Steel Heddle Mfg. Co.

JOINT COMPOUND.
Dixon Crucible Co., Jos.

JUTE BAGGING MACHINE.
Proctor & Schwartz, Inc.

KETTLES—SIZE.
(See Size Kettles.)

KETTLES—SODA.
Lombard Iron Works & Supply Co.

KIERS.
(See Bleaching Kiers.)

KNIT GOODS.
(See Cotton Cloth Commission Merchants and Dealers.)

KNIT GOODS WASHERS.
(See Washers—Cloth.)

KNITTING MACHINERY AND SUPPLIES.
Brinton Co., H.
Cooper Co., Charles.
Fidelity Machine Co.
Hemphill Mfg. Co.
Hoffman, Inc., Alfred.
Hunt Machine Co., Rodney.
Marrow Machine Co.
Scott & Williams.
Stafford & Holt.
Standard Trump Bros. Machine Co.
Textile Machine Works.
Torrington Co.
Wildman Mfg. Co.
Willcox & Gibbs Sewing Mach. Co.

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Torrington Co.

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Barber-Colman Co.

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Bristol Co.
Most Co.
Taylor Instrument Co.
Veeder Mfg. Co.

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(See Belt Lacing.)

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Carter Electric Co.
Cooper Hewitt Electric Co.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

LAMP GUARDS—KEY LOCKING
(See Electric Lamp Guards.)

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Appleton Electric Co.
Carter Electric Co.
Cooper Hewitt Electric Co.
Westinghouse Elec. & Mfg. Co.

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(See Village Architects.)

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Whitin Machine Works.
Woonsocket Mch. & Press Co.

LATHS.
Ryerson & Son, Inc., Jos. T.

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Fletcher Works.
Hunt Machine Co., Rodney.
Phila. Drying Mchry. Co.
Schaum & Uhlinger.
Tolhurst Machine Works.

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(See Aprons.)

LEATHER BELTING.
(See Belting.)

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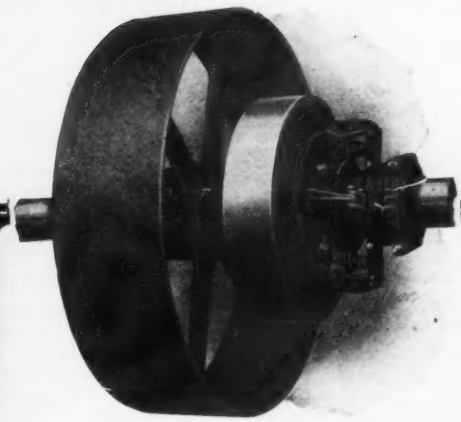

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Williams & Sons, I. B.

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LIGHTING ENGINEERS AND CONTRACTORS.
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LIGHTING FIXTURES.
General Electric Co.
Westinghouse Electric & Mfg. Co.

LIGHTING PLANTS.
Fairbanks-Morse & Co.

LINEN YARNS.
(See Yarns—Linen.)

LINK BELTING.
(See Belting—Link.)

LINTERS.
(See Waste Dealers.)

LIQUID CHLORINE.
(See Chlorine.)

LOADERS — WAGON AND TRUCK.
Link-Belt Company.
Morse Chain Co.

LOCKERS AND CABINETS.
Lupton's Sons Co., David.

LOGWOOD EXTRACT.
(See Dyestuffs and Chemicals)

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Saco-Lowell Shops.

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Crompton & Knowles Loom Works.
Draper Corporation.
Fletcher Works.
Halton's Sons, Thomas
Saco-Lowell Shops.
Schaum & Uhlinger.
Stafford Co.

LOOM ATTACHMENTS—AUTOMATIC.
Draper Corporation.

LOOM HARNESS.
American Supply Co.
Atlanta Harness & Reed Mfg. Co.
Crompton & Knowles Loom Works.
Mossberg Loom Harness Co.
Garland Mfg. Co.
Halton's Sons, Thomas
Steel Heddle Mfg. Co.
Walker Mfg. Co.

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Cooks Sons, Inc., Adam
Dixon Crucible Co., Jos.
N. Y. & N. J. Lubricant Co.
Texas Co.

LUBRICATORS.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.

LUG STRAPS
(See Straps—Leg.)

LUMBER.
Builders Lumber Co.
Downar Lumber Co.
Emry & Hansen Flooring Co.
Southern Wood Preserving Co.
Taylor-Colquitt Co.

MACHINERY GUARDS.
(See Guards—Machine.)

MACHINE TOOLS.
(See Tools.)

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Briggs-Shaffner Co.
Lombard Fdry. & Mach. Wks.

MAPLE FLOORING.
(See Flooring.)

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Bradley Mfg. Co., A. J.

MEASURING AND FOLDING MACHINES.
Hermas Mach. Co.
Textile Finishing Mchy. Co.
Textile Machine Works.

MEASURING DEVICES.
Hermas Mach. Co.
Root Co., The
Veeder Mfg. Co.

MERCERIZED YARNS.
(See Yarns—Mercerized.)

MERCERIZERS.
Aberfoyle Mfg. Co.
Amer. Yarn & Processing Co.
Bancroft & Sons Co., Joseph.
Dixie Mercerizing Co.
Elmora Co.
Southern Mercerizing Co.
Standard Cocoa Thatcher Co.

MERCERIZING MACHINERY.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

METAL—MONEL.
International Nickel Co.

METAL CEILINGS, ETC.
Lupton's Sons Co., David.

METAL FLOORING.
(See Flooring—Steel.)

METAL PARTITIONS.
(See Partitions.)

METALS—PERFORATED.
(See Screens and Sieves.)

METERS — FLOW, AIR, GAS, ELECTRIC, STEAM, ETC.
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

METERS—COUNTINGS.
(See Counters.)

MILL BASKETS AND BOXES.
(See Boxes—Mill.)

MILL ENGINEERS.
(See Architects and Engineers.)

MILL VILLAGES.
(See Villages.)

MILL SUPPLIES—MISCELLANEOUS.
(See Supplies—Mill.)

MILL WHITE PAINT.
(See Paint.)

MONEL METAL.
International Nickel Co.

MOPS.
Atlanta Brush Co.

MOTION PICTURES.
(See Theatre Equipment.)

MOTORS AND GENERATORS—ELECTRIC.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
Fairbanks-Morse & Co.
General Electric Co.
Lincoln Elec. Co.
Westinghouse Elec. & Mfg. Co.

MOTOR TRUCKS.
White Co., The

MUSICAL INSTRUMENTS.
Conn, Ltd., C. G.

NAPPER ROLL GRINDING MACHINES.
(See Card Grinders.)

NAPPING MACHINERY.
Saco-Lowell Shops.
Woonsocket Napping Mach. Co.

NAPPER CLOTHING.
(See Card & Napper Clothing.)

NAPPER ROLL GRINDERS.
Roy & Son Co., B. S.

NEEDLES—KNITTING.
(See Knitting Needles.)

NICKEL ALLOY METALS.
International Nickel Co.

OAK FLOORING.
(See Flooring.)

OFFICE EQUIPMENT AND SUPPLIES.
Lupton's Sons Co., David.

OIL— LUBRICATING.
Cooks Sons, Inc., Adam
N. Y. & N. J. Lubricant Co.
Texas Co.

OIL ENGINES.
(See Engine—Oil.)

OIL—FINISHING.
(See Finishing and Sizing Materials.)

OILS—SCOURING AND FULLING.
Arabol Mfg. Co.
Laurel Soap Mfg. Co., Inc.

OIL—SILK FINISHING.
Burkart Schier Chemical Co.
Laurel Soap Mfg. Co., Inc.

OIL CUPS.
(See Lubricants.)

OIL PAPER.
Bradley Mfg. Co., A. J.

OIL PUMPS.
(See Pumps—Oil.)

OIL SEPARATORS.
(See Separators.)

OILING DEVICES.
(See Lubricators.)

OPENING MACHINERY—COTTON, WOOL, WASTE, ETC.
American Machine Co.
Centrif-Air Machine Co.
Howard & Bullough.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Whitin Mch. Works.
Woonsocket Mch. & Press Co.

OXIDIZING MACHINERY.
Phila. Drying Machinery Co.

PACKINGS.
Goodyear Tire & Rubber Co.
Jenkins Bros.

PAINT, ENAMELS, VARNISHES, ETC.
Aluminum Co. of America
Arco Co.
Dixon Crucible Co., Jos.
Skybryte Co.

PAINTING CONTRACTORS.
(See Contractors.)

PANEL BOARD.
(See Switchboards.)

PAPER AND PAPER BOARDS.
Bradley Mfg. Co., A. J.

PARTITIONS — STEEL AND WIRE.
Anchor Post Fence Co.
Cyclone Fence Co.
Lupton's Sons Co., David.

PATENT ATTORNEY.
Eaton, Paul B.

PENSTOCKS.
Hunt Machine Co., Rodney

PERBORATE OF SODA.
Roessler & Hasslacher Chemical Co.

PERFORATED METAL.
(See Screens and Sieves.)

PEROXIDES.
Roessler & Hasslacher Chemical Co.

PICK COUNTERS.
(See Counters.)

PICKERS—CURLED HAIR.
Proctor & Schwartz, Inc.

PICKERS—LEATHER.
Bond Co., Chas.
Charlotte Leather Belting Co.
Garland Mfg. Co.
Graton & Knight Mfg. Co.

PICKER GEARS.
(See Gears.)

PICKER STICKS.
Garland Mfg. Co.
Pioneer Pole & Shaft Co.

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Pioneer Pole & Shaft Co.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Whitin Machine Works.
Woonsocket Mch. & Press Co.

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Washburn.

PINIONS.
General Electric Co.

PIPE—CULVERT.
(See Culvert.)

PIPE AND PIPE FITTINGS.
Crane Co.
Hunt Machine Co., Rodney
Jenkins Bros.
Lunkenheimer Co.
Parks-Cramer Co.

PIPE COILS.
Crane Co.

PIPE COVERING
Armstrong Cork & Insulation Co.
Mundet & Son, Inc., L.

PIPING CONTRACTORS.
Parks-Cramer Co.

PIPE JOINT COMPOUND.
Dixon Crucible Co., Jos.

PLAYGROUND APPARATUS & EQUIPMENT.
Rundle-Spence Mfg. Co.

PLUMBING GOODS.
I. X. L. Pump & Mfg. Co.
Rundle Spence Mfg. Co.
Vogel Co., Jos. A.

PNEUMATIC MACHINERY & TOOLS.
Independent Pneumatic Tool Co.

PORCELAIN GUIDES.
Page-Madden Co., Inc.

POSTS—FENCE (IRON).
Anchor Post Fence Co.
Cyclone Co.

POSTS—FENCE (WOOD).
Southern Wood Preserving Co.
Taylor-Colquitt Co.

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Broad River Power Co.
Carolina Power & Light Co.
Columbus Electric & Power Co.
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Allis-Chalmers Mfg. Co.
Bond Co., Chas.
Bristol Co.
Carlyle-Johnson Mch. Co.
Charlotte Leather Belting Co.
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Dodge Mfg. Co.
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General Electric Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
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Lambeth Rope Corp.
Link-Belt Company.
Morse Chain Co.
Sizemore, T. A.
SKF Industries, Inc.
Timken Roller Bearing Co.
Westinghouse Elec. & Mfg. Co.
Williams & Sons, I. B.
Wood Sons Co., T. B.

POWER PLANTS—COMPLETE.
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(See Paints.)

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Lupton's Sons Co., David.

PRESSES.
American Laundry Mchy. Co.
Butterworth & Sons Co., H. W.
Economy Baler Co.
Logemann Bros. Co.
Phila. Drying Mch. Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Textile Finishing Machinery Co., The

PRESSURE GAUGES.
(See Gauges.)

PRESSURE REGULATORS.
(See Regulators—Pressure.)

PRINTING.
Shewalter Printing Co., A. J.

PRINTING EXTRACTORS, HYDRO.
Tolhurst Machine Works.

PROCESSING.
(See Dyeing, Bleaching and Finishing.)

PROPELLER FANS.
(See Blowers.)

PULLEYS.
Dodge Mfg. Co.
Link-Belt Company.
Morse Chain Co.
Wood Sons Co., T. B.

PULLEY COVERING.
Williams & Sons, I. B.

PUMPS.
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American Well Works.
Fairbanks Morse & Co.
I. X. L. Pump Mfg. Co.
Sydnor Pump & Well Co., Inc.
Toomey, Frank
Westinghouse Elec. & Mfg. Co.

PUMPING PLANTS—COMPLETE.
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PUMPS—OIL.
I. X. L. Pump Mfg. Co.
Lunkenheimer Co.

PUMP VALVES.
(See Valve Discs.)

PYROMETERS.
Bristol Co.
Taylor Instrument Co.

QUILLS.
U. S. Bobbin & Shuttle Co.
Wilcox Bros. Bobbin Co., Ltd.

QUILL BOARDS.
Washburn.

QUILL CLEANING MACHINES.
Terrell Machine Co.

RAILS (INDUSTRIAL).
Ryerson & Son, Inc., Jos. T.

RAILWAY.
Seaboard Airline Ry.

RAITHES—BEAMING.
Walker Mfg. Co.

RAW STOCK MACHINES.
Butterworth & Sons Co., H. W.

RAYON FIBRE YARN.
(See Yarn—Artificial Silk.)

RAYON MACHINERY & EQUIPMENT.
(See Silk Machinery.)

RAYON AND SILK COPPING, CONING, WINDING WARPING AND THROWING.
Duplan Silk Co.

RECEPTACLES—FIBRE.
(See Fibre Products.)

RECOVERING TOP FLATS.
Howard Mfg. Co.

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Bristol Co.
General Electric Co.
Taylor Instrument Co.

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American Supply Co.
Atlanta Harness & Reed Mfg. Co.
Mossberg Loom Harness Co.
Southern Loom Reed Mfg. Co.
Steel Heddle Mfg. Co.
Walker Mfg. Co.

REELS.
Atwood Machine Co.
Crompton & Knowles Loom Works.
Easton & Burnham Mch. Co.
Hunt Machine Co., Rodney
Saco-Lowell Shops.
Sipp Machine Co.
Whitin Machine Works.

REFLECTORS—LAMPS.
(See Lamp Reflectors.)

REGULATORS—LIQUID LEVEL.
Fisher Governor Co.
General Electric Co.
Power Regulator Co.
Taylor Instrument Co.

REGULATORS (BOILER FEED)
(See Boiler Feed Regulators.)

REGULATORS — (DRAFT).
(See Draft Regulators.)

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Bristol Co.
Fisher Governor Co.
General Electric Co.
I. X. L. Pump Mfg. Co.
Power Regulator Co.
Taylor Instrument Co.

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(See Temperature Controllers.)

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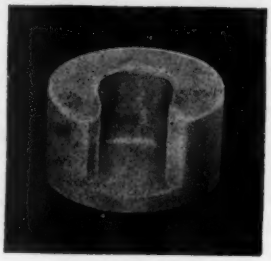

No. 672

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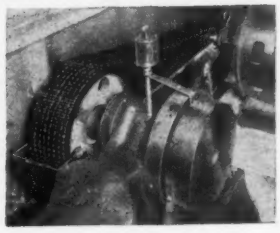

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(See Knitting Machinery.)

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Wilson Bros. Bobbin Co., Ltd.

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Draper Corporation.
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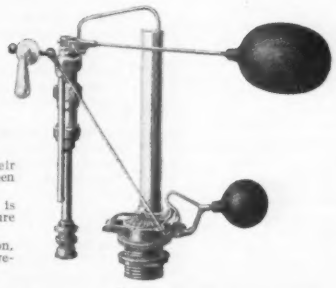

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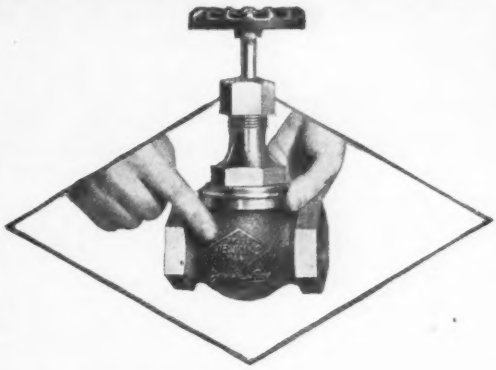

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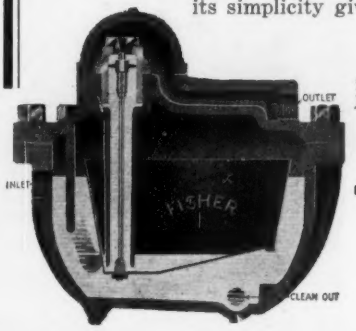

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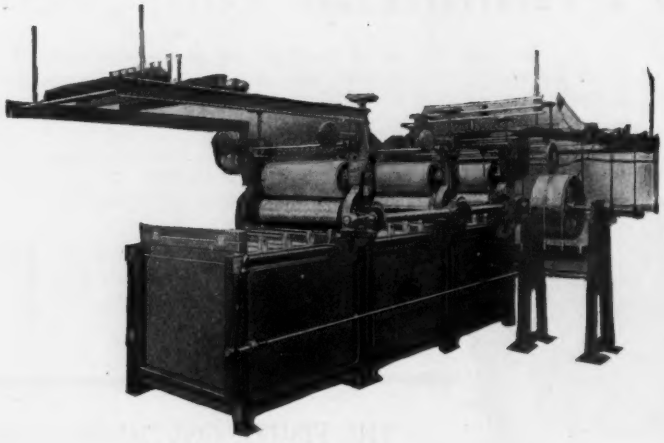

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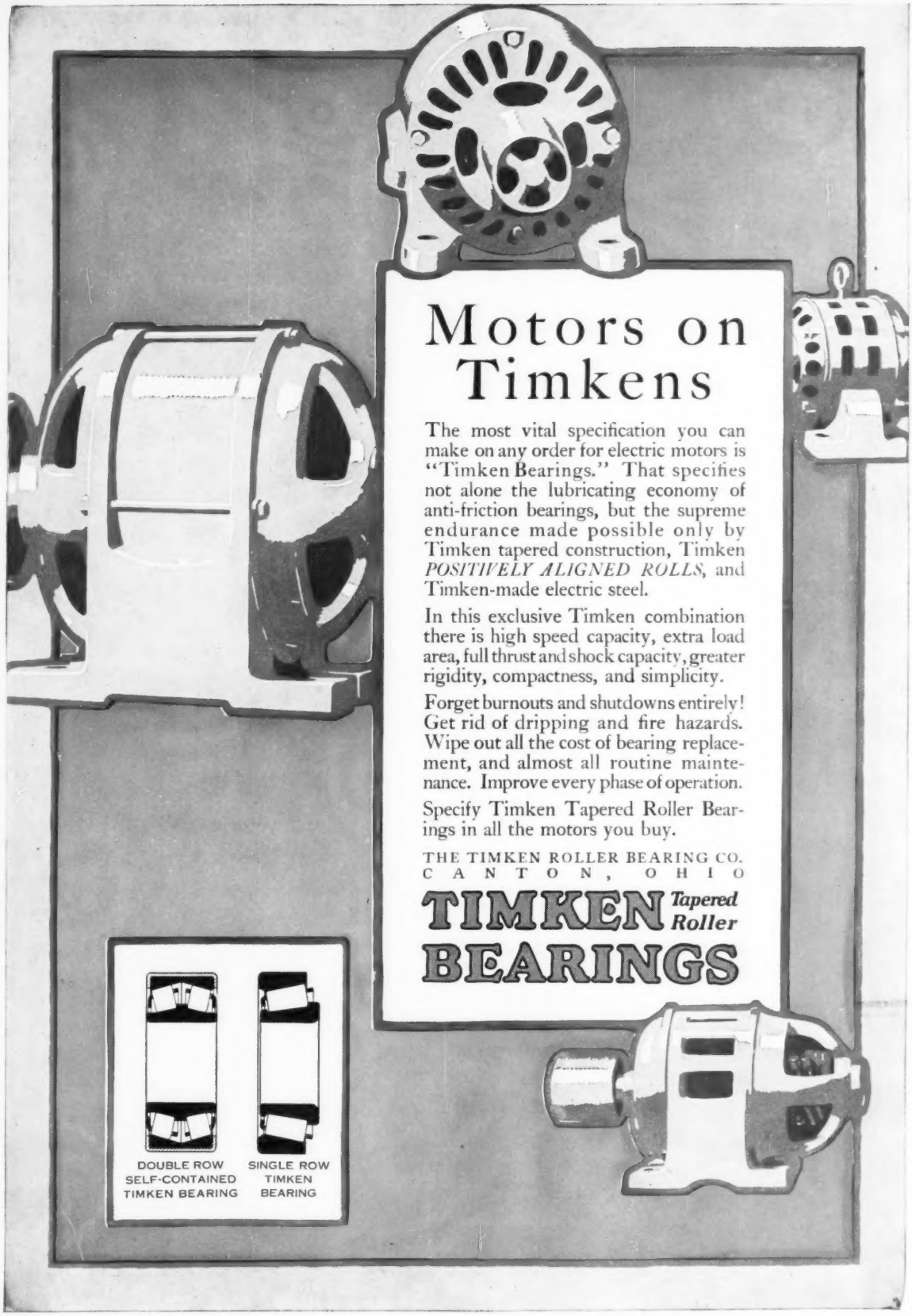

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